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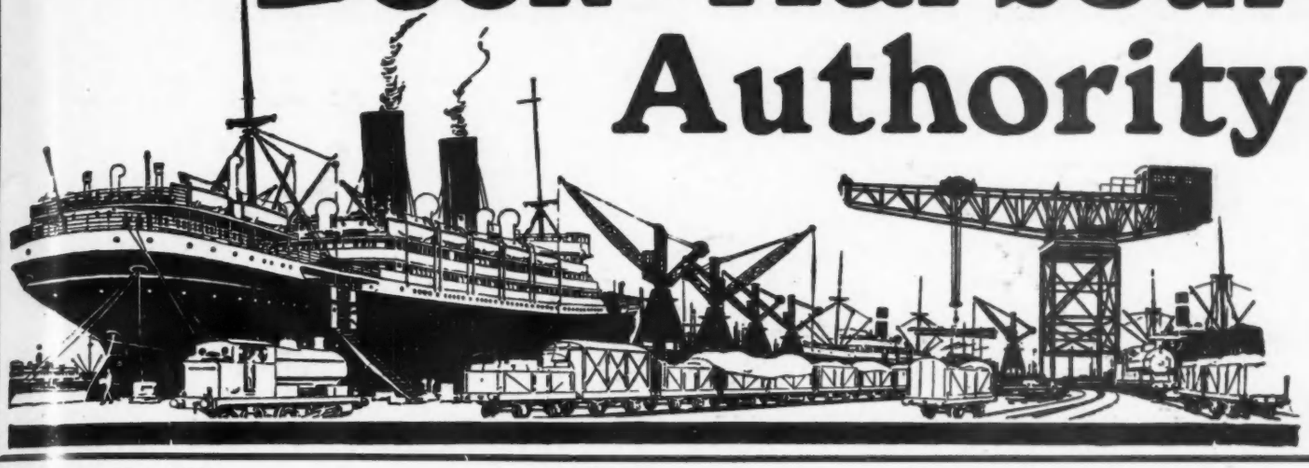

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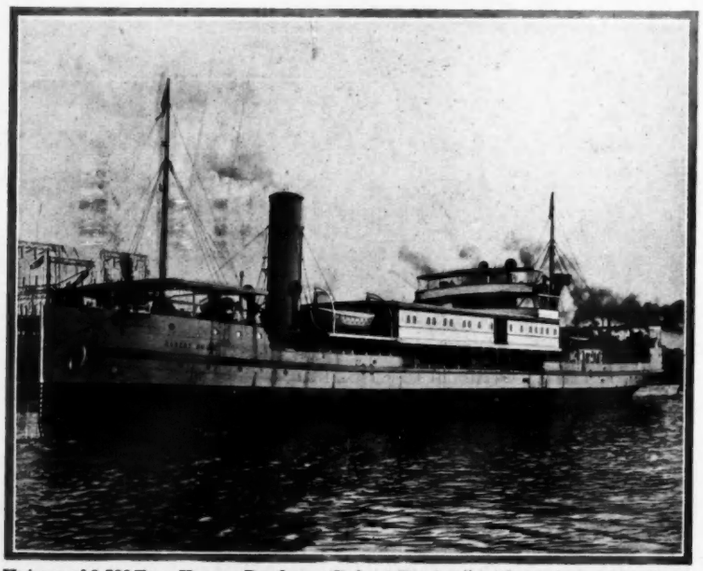

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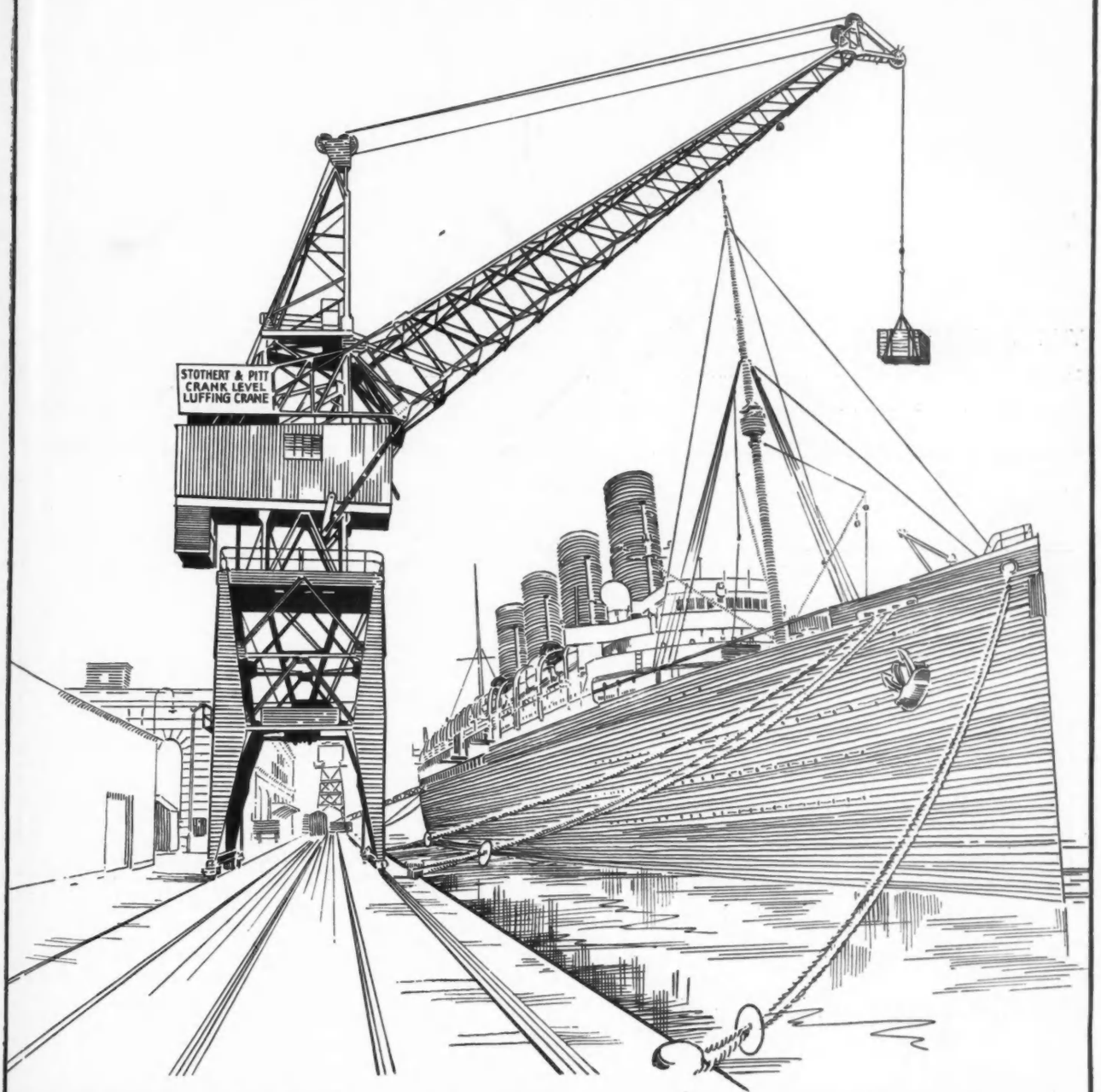

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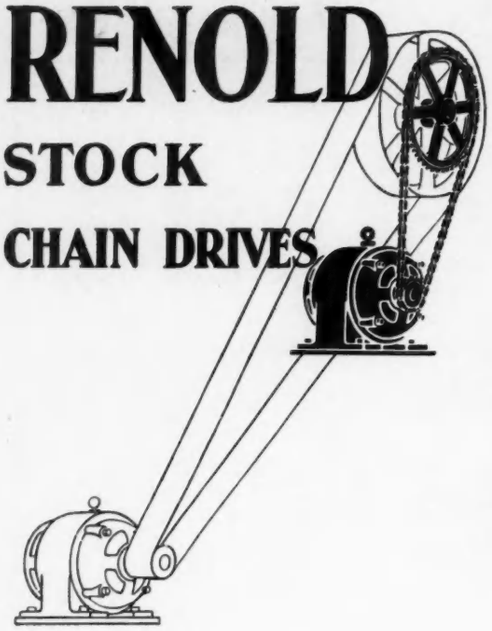

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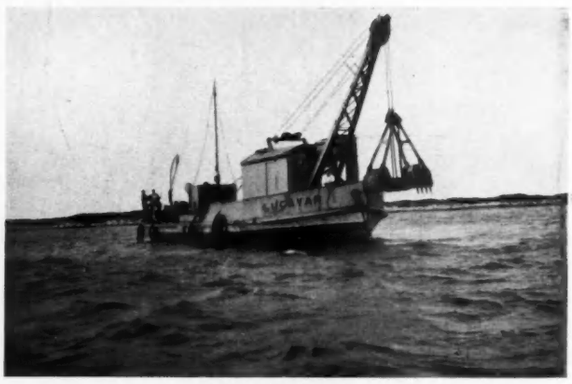

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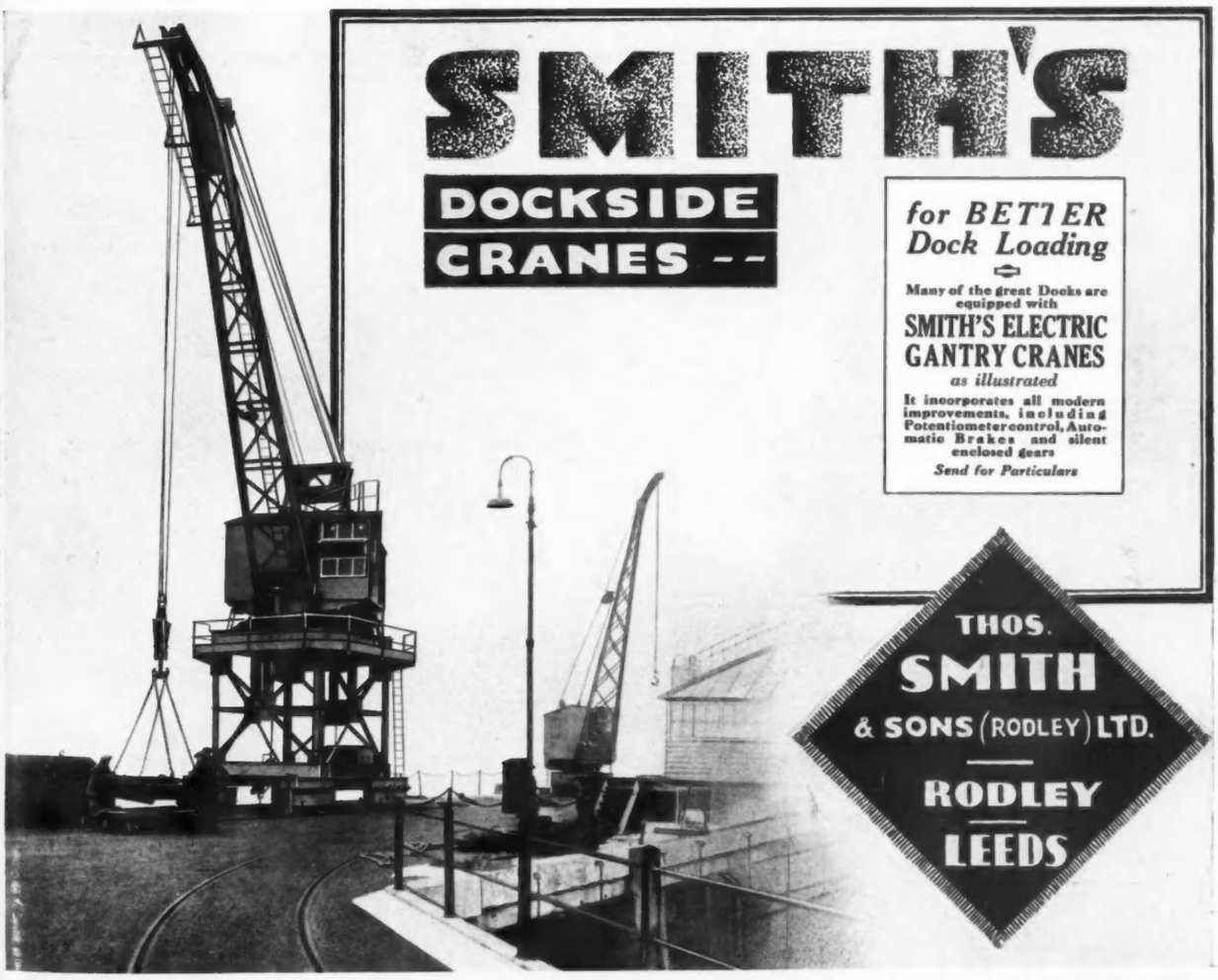

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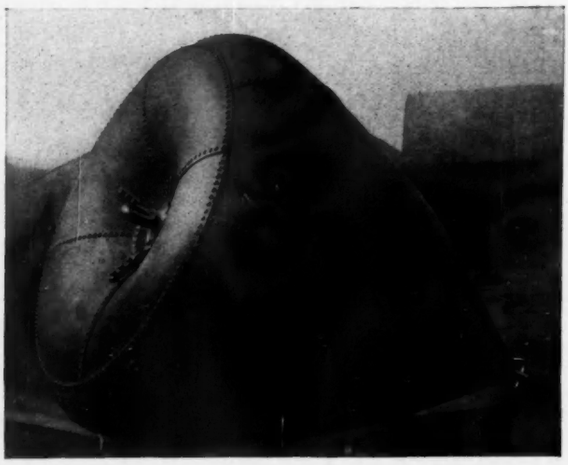

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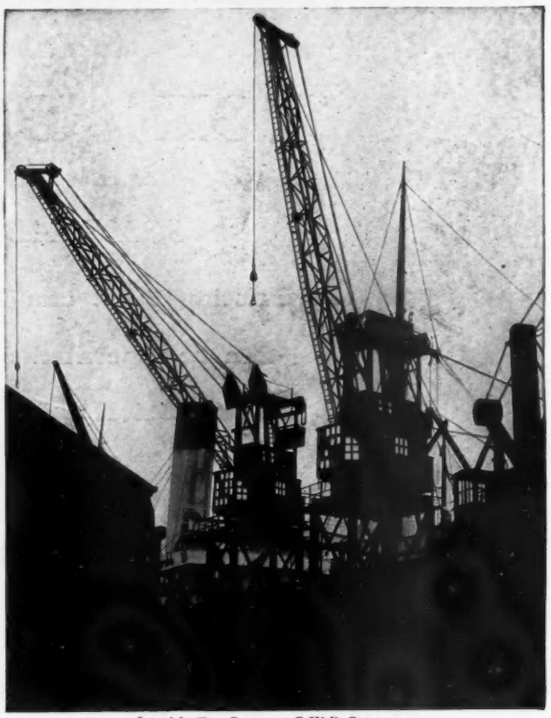

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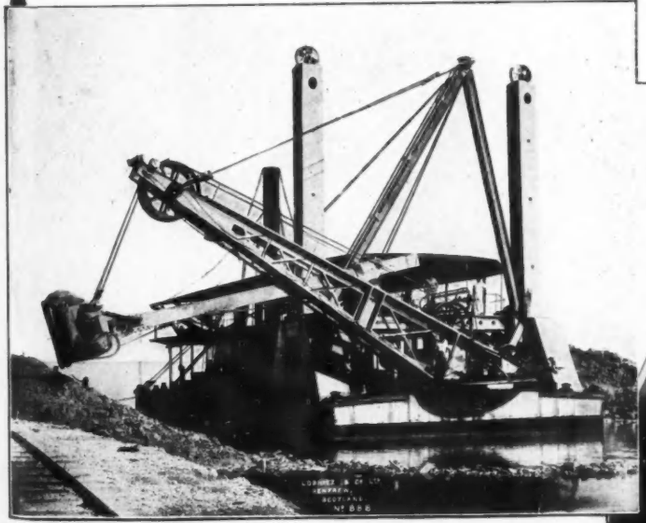

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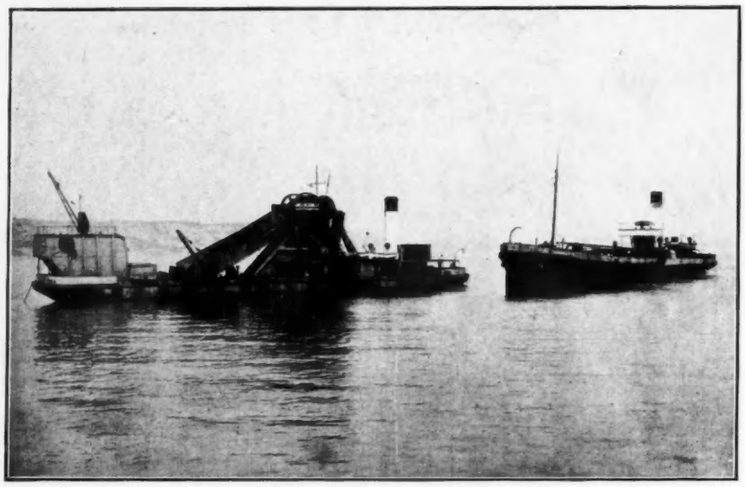

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The Dock & Harbour Authority

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THE DOCK & HARBOUR AUTHORITY

No. 163. Vol. XIV. MAY, 1934

Editorial

The Port of Singapore.

The Port of Singapore is, to-day, one of the principal ports in the world and, owing to its ideal geographical position, it is also the central point for trade in the Far East. Its designation as "The Crossroads of the East" is in no way exaggerated.

Singapore first came under the British rule in 1819, when Sir Stamford Raffles conceived the idea of establishing a trading station at Singapore for the purpose of breaking the Dutch monopoly in trade in the East Indies. From the time of the British occupation, Singapore has gradually forged ahead and flourished until to-day it is one of the finest ports throughout the world.

The Port of Singapore comprises an Inner Harbour, Outer Harbour and Western Anchorage, and the port limits cover an area of 36¼ sq. miles. The facilities at the port are in every way up-to-date and sufficient to meet the requirements of present-day shipping.

There are five dry docks in the port, the smallest of which (No. 1 Dock) has a length of 396 ft. 6 ins., and a breadth at entrance of 47 ft. 4 ins., and was completed in 1859, and the largest dock, known as the King's Dock, has a length of 879 ft. and a breadth at entrance of 100 ft. The available quayage in the port amounts to 11,139 lineal ft., and this is well served by mechanical appliances of all kinds for the purpose of unloading and loading vessels, and the warehousing accommodation is very extensive.

The volume of trade handled by the Singapore Harbour Board in 1931, which are the latest figures available, was 3,447 vessels berthed, with a nett registered tonnage of 10,080,436; the imports comprised 96,437 tons of fuel oil, 204,126 tons of coal and 1,031,160 tons of general cargo; the export figures were 105,716 tons of fuel oil, 215,006 tons of coal and 849,730 tons of general cargo. The gross revenue received by the Board in 1931 was $4,606,902 from the wharves and $2,780,597 from the docks.

The Port of Singapore forms the supplement for this month's issue, and an illustrated article by G. W. A. Trimmer, Esq., M.Inst.C.E., M.I.Mech.E., M.Inst.T., chairman and General Manager, Harbour Boards, Straits Settlements, appears on another page.

Good Progress in Docks Extension Scheme at Southampton.

Such good work continues to be made on the docks extension scheme at Southampton that this summer four berths at the new quay will be available for ships desirous of landing passengers and discharging cargo. Last summer two berths were in use. Since then the sheds on the quay have been going up rapidly, and in the course of a few weeks will be ready for use.

The whole of the cope work of the 7,500 ft. of new deep water quay wall has been completed, with the exception of about 400 ft. at the western end.

Progress has also been made with the dredging of the new deep water channel, to give access to the new berths and to the King George V. graving dock at Millbrook. The channel is 35 ft. L.W.O.S.T. and the depth of water alongside the quay wall is 45 ft. L.W.O.S.T.

Since the task of re-claiming the mudland is being carried out with the firm material dredged from the river Test that phase of the extension work has proceeded without interruption. It is reasonably certain that both the dredging and reclamation work will be completed by the end of the year.

Although the spectacular side of the extension work is nearing completion the engineers still have plenty of work ahead of them. Apart from the making of roads and the provision of the necessary rail communications, many buildings of various sorts have to be erected on the new dock estate.

River Tyne Achievements.

Interesting details of the work of the Tyne Improvement Commission were given by Mr. Richard Aughton, general manager, in an address recently on the "Work of a Port Authority." Mr. Aughton said that on the Tyne, to date, £8,000,000 had been spent on making the Port and £22,000,000 on maintaining the works created. The Tyne had been strengthened and deepened for a distance of 17 miles starting from the North and South Piers. The chief Ports, like the Tyne, were growing in importance year by year on account of the greater size of the steam and motor vessels. It had been the policy of the Tyne Commission to make the Tyne one of the cheapest ports in the country, and the total reductions in dues made in the past ten years had amounted to the colossal sum of £3,000,000 or about £300,000 per annum. There were now concrete evidences of trade recovery on the river. In August, 1932, there were 180 vessels laid up in the river, whereas to-day there were about 100.

Nothing had been more remarkable than the growth of the oil trade. Mr. Aughton paid a tribute to the private enterprise on the river, and spoke of the important works carried out by the railway companies, riparian corporations and companies.

Modernisation of Grimsby Dock System.

The modernisation of Grimsby by the extension of its dock system and the provision of new appliances is proceeding rapidly. The excavation of the new dock for the accommodation of the fishing industry has been done up to a certain point and water has now been admitted, while dredging is now in progress to complete the work. At the Royal Dock two new coaling towers have been provided and a disused goods warehouse has been transformed into cold storage and has already received its first cargo of frozen halibut. By means of an overhead conveyor a steamer's cargo can be transferred direct from ship to store.

The Port of Bristol, 1884-1934.

The year 1884 stands as a prominent landmark in the development of the great docks system of the Port of Bristol. It was on the 1st September of that year that the Corporation of Bristol took over from private companies the docks at Avonmouth and at Portishead, thereby bringing all the docks within the Port under municipal ownership. During the past fifty years great developments have taken place at Avonmouth. In 1908 the Royal Edward Dock was opened by King Edward VII., and as trade rapidly developed this was followed by further extensions in 1928, when H.R.H. the Prince of Wales opened the Eastern Arm of that dock, considerably adding to the accommodation available. At a later stage, in order to cope with the rapid expansion of the Oil trade, the Western Arm of the Royal Edward Dock was completed and equipped to deal especially with this growing industry. Meanwhile, the original section of the Avonmouth Docks has been allocated largely to the Milling and Oilseed crushing industries, in connection with which several large mills have recently been erected, and others are in course of construction.

The recently-published trade figures for the financial year ended the 31st March amply justify the policy of the Authority in providing every facility for the rapid "Turn-round" of steamers and the quick and efficient handling of goods. During the year just closed there has been an increase in register tonnage entering the port of 177,000 tons, and in exports and imports passing over the quays an increase of no less than 208,000 tons, as compared with 1933. Despite the satisfactory nature of these returns, the Port Authority are confidently anticipating a still greater volume of business during the year just commenced.

Irish Harbour Matters

Limerick

Limerick Harbour Board.

In presenting the annual report of the Limerick Harbour Board for 1933, the Secretary stated that, as compared with the year prior to the economic contest with Great Britain, the revenue had decreased by about £2,500. All things considered, he said the drop in revenue was not remarkable.

Tonnage entering the port was 212,338, an increase of 49,443 on the previous year.

Revenue from dues was £21,448, a decrease of £770. The total revenue was £27,191, and outlay £16,817, leaving a surplus of £10,374. The expenditure on the dock extension scheme was £31,308.

Alderman Wallace said that cattle showed a drop of 4,000 head exported, as compared with 1932. Imports were down 28,000 tons. There was a substantial fall in maize imports, while wheat imports increased by 15,000 tons.

The Secretary said that this was in accordance with the Government's policy.

Alderman Wallace said that the export of eggs had fallen by 400 tons.

The Mayor said that, as compared with other ports, they had very little to complain of.

Dublin

Dublin Port and Docks Board.

The register of tonnage which entered the Port of Dublin during the quarter ended 31st March, 1934, showed an increase of 24,508 tons over the corresponding quarter in 1933; while the amount collected in dues showed an increase of £1,219 8s. 7d., as compared with last year.

Mr. Vincent J. Moran was appointed mechanical engineer on the motion of the chairman, seconded by the Lord Mayor (Alderman A. Byrne, T.D.).

Stothert & Pitt, Ltd., obtain Dublin Contract for Two Transporters.

To meet the urgent necessity for improved coal handling facilities at their Pigeon House Installation, the Electricity Supply Board of the Irish Free State, Dublin, has accepted the tender of Stothert and Pitt, Ltd., Bath, for the supply and erection of two electrically-driven transporters. Each machine will have a capacity of 90 tons of coal per hour. By means of a single rope type grab of 68/58 cub. ft. capacity, the coal will be transferred from ships alongside the quay to a 24 in. troughed belt conveyor fitted with a continuous type weighing machine, all coal being weighed and recorded on the transporter bridge before being discharged into hoppers for delivery to the boiler house, or taken by means of further conveyors to the storage ground, as may be desired. Each machine is to be provided with a luffing boom, enabling it to be travelled to any desired point on the quay while ships are alongside.

Port of Southampton Topics

Docks Statistics for March.

Welcome improvements in many phases of the activities at Southampton Docks were recorded in the March statistics issued by the Southern Railway.

The improvement was not in respect of the number of ships using the port, but the tonnage figures were well up, there was a substantial increase in the volume of cargo handled, and passenger returns were satisfactory.

During the month 206 inward-bound vessels were handled in the docks, compared with 209 in the corresponding month last year, while the number outward was 214, in comparison with 212. The net decrease was therefore only one vessel.

The tonnage figures showed big increases. Inward gross tonnage mounted from 1,070,595 tons to 1,389,279, giving an advance of 318,684 tons. Outward, the total rose from 1,067,394 tons to 1,350,116, a jump of 282,722 tons.

The net tonnage returns were equally pleasing, for there were increases of 155,782 tons inward and 141,216 tons outward. The inward total was 722,123 tons and the outward 707,282 tons.

The increase in the amount of cargo was particularly gratifying, for, apart from the fact that for many years the Southern Railway Company's ambition has been to increase the reputation of Southampton as a cargo port, it is freight handling which provides labour. Imports amounted to 45,587 tons, as compared with 40,914 tons a year ago, and exports mounted from 31,940 tons in March, 1933, to 35,390 tons. There were thus increases of 4,673 tons in inward cargo and 3,450 tons in outward freight.

The passenger returns showed nearly 3,000 more travellers passing through the port than in March a year ago, despite the fact that the depression in North Atlantic travel shows little definite sign of lifting. During the month 10,029 passengers landed, as against 9,515 in the same period last year, and 11,121 embarked, as compared with 8,817. The increases were therefore 514 inward and 2,304 outward.

The number of troops passing through the port fell by 3,467. The number arriving fell from 5,021 to 1,554. There were no trooping departures during the month.

Two More Records for Southern Railway.

Three million packages of South African deciduous fruit have been unloaded at the Southern Railway's Docks at Southampton during the four months of the present season, December to March. This represents an increase of nearly 50 per cent. on the similar period of last year—an amazing advance.

It is not generally realised that these Docks now deal with 80 per cent. of the South African fruit imported into the United Kingdom. More and more are importers availing themselves of the unique facilities provided by the Southern Railway at their Docks at Southampton for the rapid unloading and placing on rail of perishable goods.

Peaches, plums, pears, grapes and nectarines form the bulk of this fruit traffic. To facilitate handling, the fruit is packed in boxes of uniform size, each box having two slats coloured in accordance with the contents. Thus no time is wasted in reading labels. On one occasion this year, over 250,000 packages were landed at the Southern Railway's New Docks from one boat alone.

An inwards shipping tonnage of nearly 3½ million tons for the first three months of this year gives a further record to the Southern Docks at Southampton.

This represents an increase of 17 per cent. on the first quarter of 1933. The previous record for the corresponding period was in 1929, when the inwards tonnage stood at 3,027,656 tons.

Port of London Notes

London's Shipping.

During the week ended April 6th, 877 vessels, representing 983,240 net register tons, used the Port of London. 490 vessels (814,764 net register tons) were to and from Empire and Foreign ports, and 378 vessels (168,476 net register tons) were engaged in coastwise traffic.

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During the week ended April 13th, 1,124 vessels, representing 897,669 net register tons, used the Port of London; 477 vessels (740,092 net register tons) were to and from Empire and Foreign Ports and 647 vessels (197,519 net register tons) were engaged in coastwise traffic.

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During the week ended April 20th, 933 vessels, representing 945,413 net register tons, used the Port of London; 459 vessels (740,092 net register tons) were to and from Empire and Foreign Ports, and 474 vessels (205,321 net register tons) were engaged in coastwise traffic.

London's Food.

London received a record number of eggs from Australia last season. No fewer than 1,567,400 Gt. Hds. were landed in the Port. Figures for other principal ports were: Liverpool, 149,500 Gt. Hds.; Hull, 50,600 Gt. Hds., and Manchester, 24,500 Gt. Hds.

* * * *

Canada is buying New Zealand butter, and large quantities have recently been re-exported from Surrey Commercial Docks.

* * * *

Australia sold to London 46,000 packages of apples, pears and plums during March.

* * * *

Over 35,000 gallons of rum arrived at the West India Docks, London, during March.

* * * *

America's demand for wine has more than doubled the bottling business at London Dock. Nearly 56,000 bottles were exported during March, as compared with 24,000 during the same month last year.

Ocean Passenger Traffic.

The increasing popularity of London as a passenger port is shown by the greater use of the Tilbury Passenger Landing Stage where most of this traffic is centred. The number of passengers dealt with during last year was 106,553 as compared with 70,115 during the previous year. 483 vessels, representing 5,371,248 gross register tons, used the Stage.

The Port of Manchester

Large Consignment of Goods arrive from Australia

The "City of Dieppe" (nearest) and the "Clan Farquhar" (beyond) discharging Australian Produce at Manchester Docks.

THE "City of Dieppe" from Australia, which arrived in Manchester on Monday, April 23rd, brought to the port:—23,838 carcasses of lamb, 700 boxes of butter, 757 bales of wool, 504 tons of general cargo, and 2,000 tons of wheat.

It will be recalled that the direct monthly sailings from the Australian ports to Manchester commenced at the end of last year; this is one of the largest consignments which has reached the port since the inauguration of the new regular sailings.

S.S. "City of Dieppe" loading Australian Lamb Carcasses at Sydney, N.S.W., for Manchester. In the direct cargo to Manchester were included over 23,000 Carcasses of Lamb.

The "City of Dieppe" loaded at Brisbane, Sydney, Melbourne, Adelaide and Fremantle.

The vessels taking part in this new regular service belong to the Ellerman-Bucknall line, Scottish-Shire and Federal lines, and include vessels like the "City of Dieppe," "City of Tokio," "Banffshire" and "Berwickshire," "Middlesex," "Somerset" and "Limerick," all round about 7-8,000 tons gross.

While the bulk of her cargo will be consumed in the Manchester district, some of it will be consigned further afield into that larger area for which the port is the distributing centre. The meat shipment, one of the largest ever brought to the port, will be sold on the Smithfield Market. The wool will be passed on to Bradford. The wheat will, for the most part, pass through the Ship Canal Company's silos or go over side into barges for direct conveyance to the mills in the dock area. The butter will be largely sold on the Manchester Produce Exchange.

The "City of Dieppe" cargo caused great interest at the Australian end, and the trains of insulated wagons carrying the meat to the docks at Sydney were labelled: "Special consignment per s.s. 'City of Dieppe' to Manchester."

In October last a campaign to popularise Australian products in Manchester was officially opened by the Lord Mayor and Lady Mayoress, who attended the opening of the Australian shop in the city.

On that occasion Mr. H. C. Smart, C.B.E., in welcoming the mayoral party and guests, said that Australia was in Manchester to sell her products—butter, eggs, cheese and dried and canned fruits—and the housewives of Manchester were invited to sample Australian products, and he hoped they would then purchase supplies all the year round from their own stores. He also pointed out that Australia, in spite of its small population of 6½ millions, was Britain's third best customer, and that their only means of obtaining money to pay for imports was by the sale of their agricultural products.

The Australian Minister of Commerce, Mr. Stewart, sent a cablegram on that occasion affirming Australia's desire to buy

The Port of Manchester—continued

more British goods in return for Britain's purchases, and he congratulated the organisation on the range and completeness of the goods which 1,400 shops in the district are now selling.

During the " Australian Shopping Month " films of Australian life were exhibited in the Manchester cinemas, and audiences were given an opportunity of seeing how peaches were canned, butter made, the organisation of Australia's poultry farms and other scenes of agricultural interest.

The Hon. Richard Linton, Agent-General for Victoria, speaking in Glasgow in November last, said it was amazing how this year Australian and Dominions fruit interests had continued to glut the London market with millions of cases of fruit, enormous quantities of which were sold at a figure which did not even pay freight. Mr. Linton warned Australian producers against a repetition of creating gluts in London when there were satisfactory markets in the north capable of greatly increased development.

Pile Driving Research

THE investigation into the behaviour of reinforced concrete piles now being carried out at the Building Research Station with the collaboration of the Federation of Civil Engineering Contractors, was initiated as a direct result of troubles experienced while driving piles through a hard stratum to a set in firm ground below. It had been found difficult to construct pre-cast piles of sufficient strength to resist destruction during the hard driving necessary to penetrate the hard stratum, and failures were found to occur not only above but below ground.

The failures below ground were sometimes difficult to detect, and it is by no means certain that all damaged piles were subsequently removed.

It was felt by the engineers and contractors who had experienced these troubles that it was very desirable that some method should be evolved of estimating the amount of driving that a pile would stand without damage. This was the major problem as presented to the Building Research Station.

It was stated, additionally, that it was desirable also to be able to make a proper estimation of the safe bearing capacities of piles. This problem, although of great practical importance, was, however, to be regarded as secondary.

Obviously the problems are not easy of solution, but the troubles were regarded as sufficiently acute to make an investigation well worth while.

The investigation at the Building Research Station commenced with a mathematical analysis*. The analysis was based on the theory of wave transmission in long rods and depended on certain assumptions for conditions at the head and foot of the pile. From this analysis it was possible to estimate the stresses developed under various conditions of driving, including, amongst other things, the effects of hammer weight, drop, helmet packing and set.

The stresses calculated were shown to depend closely on the foot and head conditions, both of which are extremely difficult to evaluate mathematically. Moreover, no experimental or theoretical knowledge existed as to the degree of damage to the material of a pile caused by stresses of the expected magnitude exerted for such short durations.

It therefore became clear that the investigations would need to proceed simultaneously in two directions. On the one hand, a measurement had to be obtained of the strains produced in a pile during driving, whereby to verify or correct the mathematical analysis and to obtain estimates of the end conditions. On the other, an attempt had to be made to relate the stresses produced with the resistance of the pile to destruction.

To measure the strains produced by the blow from the hammer it was necessary to develop a strain gauge capable of measuring fluctuating strains with a total duration of the order of 1/100th of a second. The only satisfactory method available was one employing the piezo-electric property of quartz, and a special instrument was constructed to utilise this property. A short description of the instrument appears in the Building Research Board Annual Report, 1932, and is more fully described by Mr. G. Grime, M.Sc., of the Building Research Station in the Proceedings of the Physical Society, Vol. XLVI., Pt. 2, No. 253. The instrument, which is embedded in the pile during manufacture, has proved extremely satisfactory in use, and has enabled accurate records of both tensile and compressive stresses to be obtained at any desired point in the length of the pile.

Having developed a satisfactory instrument, it was next necessary to proceed to take records of the strains in piles of sufficient length to develop the stress waves. For this purpose the British Steel Piling Co. kindly loaned a 20 ft. frame, together with three monkeys ranging in weight from 500 lb. to 2,000 lb. With this it was possible to experiment on piles 15 ft. long and with a 7 in. square cross section.

The verification of the mathematical analysis entailed the standardisation of the end conditions in as simple a form as possible. The condition selected was that of a pile of uniform cross-section throughout, i.e., with a flat toe. A special pit was constructed and the pile was placed in a lead shoe on a heavy cast-iron block (for description, see Building Research Board Annual Report 1932). The piles were specially banded with steel to prevent local failure at points other than that under observation. During driving various foot and head conditions were tried. At the foot the conditions ranged from complete clamping down to simply resting on various numbers of felt pads ($\frac{1}{4}$ in. thick). In the head, a range of packings, including sacking, wood and various numbers of felt pads were used.

It was found that the general form of the strain-time curves obtained were in agreement with the mathematical conception, and that the total energy as obtained by integration agreed within 10 per cent. with the energy of the hammer. It was not found, however, that the end packing conditions were such as to lend themselves to direct mathematical analysis without further investigation of the stress-strain relations for the packings. Although from their nature the packing materials are subject to continual change during driving and within each class are found to vary greatly, the stress-strain tests have yielded useful results which will enable approximate estimates of stress to be made for the various conditions of driving met with in practice. It is hoped, ultimately, to reduce the work entailed to the simple reading of a chart.

After completion of the work in the pit, tests were made driving piles into the stiff clay adjoining. Very satisfactory results were obtained, the results showing reasonable agreement with the values deduced theoretically.

The final stage in this work is the measurement of the strains produced in full-scale piles during driving on typically difficult building sites. Arrangements have been made for this work, and it is proposed to test each pile with five gauges placed at various points in its length.

The attempt to relate the stresses produced with the resistance of the pile to destruction has involved the testing to destruction of several series of 15 ft. piles, using in all cases the cast-iron block in the pit as a resistance. To simulate various conditions of set the packing under the toes has been suitably chosen. Clearly it was practically impossible to standardise actual ground conditions, and the admittedly artificial conditions adopted (described in the 1932 Annual Report already referred to) were selected as a simple and inexpensive means of obtaining results comparable with those of certain conditions of hard driving. The stresses producing destruction were predetermined on separate piles, both in magnitude and duration. Since the test is made without side restraint and friction, it may be regarded as the extreme case, seldom realised in practice. Nevertheless, in many cases, e.g., when driving through soft ground to a hard stratum beneath, the conditions are very nearly realised, and on at least one important contract they have been reproduced closely by the occurrence of a bed of hard material within the first 6 ft. of driving.

Under these conditions it has been found that failure, including the first signs of failure, occurs at repeated stresses never less than 50 per cent. of the compressive strength as measured by an ordinary cube test. It appears, therefore, that if driving conditions in practice are such that stresses less than 50 per cent. of the cube strength are produced, failure is unlikely to occur.

To simplify the testing a small scale impact testing machine has been designed to give stresses which, by means of suitable end packing, can be varied in magnitude and duration within the limits likely to be experienced in piles during driving. The stresses are predetermined in specimens similar to those tested to destruction by means of piezo-electric gauges. Preliminary tests have shown a reasonable agreement between the results in small specimens and in 15 ft. piles, and it is intended to explore fully the effect of the various factors affecting concrete quality. It would, of course, be quite impossible to do this in 15 ft. piles because of the great expense and time required.

During the course of the work many incidental tests and subsidiary lines have been followed. These have not been described here. An account of some of them will be found in the Building Research Board Annual Reports.

With so complex a problem it is clearly impossible in the space available to describe in detail either the practical conclusions arrived at or their experimental justification. These will be published in due course in the form of a Report. Meanwhile, the above notes are intended to provide for those interested in the problem a summary of the lines along which the investigation is being pursued.

*E. N. Fox, Stress Phenomena in Pile Driving. " Engineering," September 2nd, 1932.

Notes from the North

Progress in Design of Canal Gates.

COLONEL J. A. SANER, chief engineer to the Weaver Navigation Company, in an address to members of the Manchester and District Association of the Institution of Civil Engineers in Manchester on "Canals," pointed to the advance in the building of locks, gates and sluices, and to the considerable progress made in Germany and France in the method of towage by means of electric locomotives.

Commenting on the recently-constructed swing bridge over the canalised River Weaver at Acton, he said that it was successfully tested the other day with a load of 120 tons, and could be swung four or five times with the use of only one unit of electricity. In the hydraulic work for the designing of canals of canalised rivers, no detail should be considered unimportant for personal attention. Water was a subtle danger even to the experienced engineer, and a terror to those who thought they knew all about it.

Ribble Bridge Schemes.

The Ribble has now many bridges near the sea, but none below Preston, and it seems that with the coming of the airways, the dominant days of tidal ways have gone for ever. Projects for more bridges over the narrower tidal waters down towards Lytham, have been perennially pushed into prominence. Road traffic development since the war brought transporter bridge schemes into the limelight, but the post-war slump in commerce and capital overshadowed them. They may revive and become concrete realisation, but heavy air-transport has come to the front so rapidly that esturial bridge schemes may be out of date in less than ten years hence.

Better Ship Canal Traffic Returns.

Manchester Ship Canal traffic returns continue to give satisfaction. In April the receipts from the main waterway, at £96,712, were £4,786 more than those in March, 1933, and were £13,946 more than those in March, 1932. For the first three months of this year the Ship Canal's receipts totalled £278,105, or £12,333 more than in the corresponding period of 1933, £4,887 more than in that of 1932, and only £1,591 less than in that of 1931.

Proposed New Ferry Service.

Another endeavour is being made to revive the ferry service between Liverpool and Eastham. A service was formerly maintained by a private company, but it was discontinued in 1929. The Bebington Council has now made approaches to the Corporations of Birkenhead and Wallasey, whilst the Manchester Ship Canal has been asked whether they are interested in the future use of the landing stage. Birkenhead Council has declined to run the service, a reply having been received stating that the Ferries Committee were unable to arrange a service by means of the present fleet, and they were advised that it would not be sufficiently remunerative to justify special arrangements.

That Fish Dock Idea.

There continues in Liverpool a hankering after a fish dock.

Correspondence has been passing between a special committee of the Liverpool City Council and the Mersey Docks and Harbour Board with reference to making Liverpool a fishing port. The Mersey Docks and Harbour Board has already communicated its views to the City Council, but evidently these are not considered final. So the Employment Special Committee is again to ask the Dock Board to consider the matter further.

The project is being tackled by a municipal employment committee. It is one thing to prepare a fish dock and sheds as a means of providing work, and another thing to justify the expenditure. Where is the sense in providing vast and costly facilities when it is doubtful if they will ever justify the capital expenditure involved?

Evidently the Mersey Docks and Harbour Board is taking an all-round view of the project, and is aware of the difficulties that would have to be overcome before Liverpool could rank as a fishing port of even second-rate importance.

Pier for Cleveleys?

Thornton Cleveleys Council has decided to offer facilities for the provision of a pier at Cleveleys, provided the promoters of the scheme agree to certain stipulations. These state that the pier must be no less in length than that of the North Pier, Blackpool; that the pier must be built on the foreshore opposite Beach Road; that the maximum frontage to the promenade shall be 70 ft., and that provision shall be made by the promoters for widening the promenade throughout the whole length of the frontage to the pier to a width of 100 ft.

Unprofitable Ferry Service.

The Rock Ferry service of the Birkenhead Corporation was last year run at a loss of more than £19,900. Together with the Woodside passenger ferries, this particular service will, in the course of the next few months, be transferred to the control of the Mersey Tunnel Joint Committee.

Roa Island.

Barrow-in-Furness Corporation is considering the question of replacing the pier at Roa Island. The Corporation has received letters from the L.M.S. Railway Company, Lancaster Port Commissioners, and Mr. J. R. Wright, on behalf of the pilots and boatmen at Roa Island, stating that they are unable to contribute towards the cost of erecting a new pier. The Council referred the matter to a sub-committee for the consideration of the report.

New Dredger for Dock Board.

Mersey Docks and Harbour Board has accepted the tender of Messrs. Cammell Laird and Co., Birkenhead, for the construction of a sand pump hopper dredger. Cammell Laird's constructed the dredger "Hilbre Island," and have also built other vessels for the Board, notably the sand pump dredger "Leviathan."

The new vessel, which will be numbered 1,004 when on the stocks of Messrs. Cammell Laird's, will be a very welcome order. It is another instance of Merseyside work going to a Merseyside shipbuilding firm.

Co-ordination.

Mersey Docks and Harbour Board has been invited to participate in the project for bringing about a measure of co-ordination between the Merseyside boroughs. Liverpool Corporation has invited the Corporations of Birkenhead, Bootle and Wallasey, and the Mersey Dock Board, each to appoint five representatives to a committee. Speaking at Liverpool City Council, Sir Thomas White said if they were going to tackle this great problem, which seemed insurmountable to many who thought they were not likely to meet with more success to-day than in the past, it would be necessary to bring in at some stage, and to pay for, expert assistance.

Garston Dock Retirement.

On the occasion of his retirement from the position, which he held for ten years, of superintendent of the L.M.S. Railway docks at Garston, Mr. J. B. Topham, who had been 46 years in the railway service, was presented with a cheque for £111 by the traders at the port. At the presentation ceremony, Mr. Topham referred to the improvements at the docks, and said it was possible the company would consider it necessary to make more extensions at Speke, and to lay out the track at the back of the offices, with a view to making the dock lines more mobile, and do away with congestion. Then there was a scheme for providing stabling accommodation for a very large quantity of wagons, which was very desirable from the traders' point of view. He asked that the same goodwill as had been shown to him would be extended to his successor, Mr. D. R. Roberts.

Profit from Foreshore Gravel.

Fleetwood Corporation, during the past year, realised from the sale of gravel, which is cast up by the tides, profit of £8,000. At the last Town Council meeting Ald. Robertson said the council was faced with great expense in necessary improvements in the ferry landing stages on both sides of the River Wyre, a well as providing a new ferry boat. This would more than absorb the Ferry Reserve Fund, and would probably preclude for some time any further contribution from the ferry for the relief of the rates. "Notwithstanding these prospective items of capital expenditure," he said, "we are in a position to face them with equanimity. Our financial position is very sound and the prospects for increased development of our resources and increased rateable value were never better."

Departure from Tradition.

Recently, the Mersey Docks and Harbour Board has decided to depart from tradition by permitting advertisements to be displayed on their estate—notably on the bridges leading to Liverpool Landing Stages. The Board has always kept rather aloof in the matter of posters, and has looked askance at propositions for the erection of hoardings on their estate.

Now, however, it has been decided to allow advertisements on certain parts of the estate and on the approaches leading to the Landing Stage. Neither advertisements nor neon signs will be allowed on the river front, or on much of the Board's property, which is distinguished in its architecture.

Notes from the North—continued

Problems of the River Mersey.

Mr. R. B. Kirwan, in a paper which he read to Manchester members of the Institution of Civil Engineers, said the River Mersey is almost unique among English rivers, in that it has recently undergone a drastic alteration to its natural regime, and is still in an unstable state trying to adapt itself to new conditions. The effect of the construction of the Ship Canal in 1894, and the provision of a wide weir at Irlam, over which the Mersey has a free fall at all times, has been to lower the flood level at that point by about 14 ft. This has, of course, entirely relieved the immediate surroundings from flooding, but has meant a tremendous increase in the flood gradient upstream, resulting in a higher velocity. The drop in flood level previously was about 21 ft. in the nine miles up to Stretford. This increase in velocity, aggravated by the rapid rise and fall of water level in floods, has been too much for the soft sandy soil through which the river flows, and the banks are steadily falling in. The distance upstream over which this effect can now be traced is about eleven miles, and is probably increasing.

Endeavours were being made, he said, to prevent flooding by constructing new flood banks where necessary, the material being obtained either from borrow pits or by trimming back the river bank. At Ashton-on-Mersey, where the existing flood bank was half collapsed, steel sheet piling was being used to protect the bank.

A thorough cleaning of the river bed, involving the removal of hundreds of old trees and other obstructions and the cutting of willows, is being carried on continuously. The obstructions include old piles and stones put in to protect the original banks, and heavy masonry flooding cloughs, originally built into the old flood banks and used to irrigate the surrounding lands. A general policy of widening and straightening the channel, where possible, and of improving approaches to bridges is being pursued, but as yet it has not been feasible to undertake extensive measures to protect the banks from erosion, except in special cases where the situation is dangerous.

Weak Bridges.

Port interests at Liverpool and Manchester are gravely concerned by Section 30 of the Road and Rail Traffic Act, which specifies the machinery to be employed for closing of weak bridges. Assuming the bridge authorities in the Manchester area carry out their proposals, then all vehicles above a laden weight of 12 tons or an axle weight of 8 tons will be unable to travel between Manchester and the following places:—Ashton-under-Lyne, Mossley, Oldham, Rochdale, Heywood, Bury, Bolton, Preston, Eccles and Warrington.

Liverpool is no less concerned. If the Section is made operative, it is a foregone conclusion that the trade of the port will be dislocated owing to the fact that the approaches of the city will be restricted to only the lightest forms of vehicles. This will result in a great increase in the number of unemployed, and there will be various other unfortunate reactions.

It is felt that local authorities should be pressed to go forward with a programme of reconstruction. The Ministry of Transport has, of course, offered 75 per cent. of the cost; if that is not sufficient, then the transport industry feels that an increased grant should be made, in orded to hasten the execution of the necessary works.

Still a matter of contention is the taxation of vehicles in port areas. A renewed effort is about to be made by the transport interests of Liverpool to secure some relief from the present heavy scale of taxation now being borne by vehicles operating exclusively in the port area.

Aden Port Trust

The following are the returns for the month of February, 1934, of shipping using the port:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	120	509,221
,, ,, under 200 tons ...	3	486
Government Vessels	5	15,662
Dhows	141	4,704
PERIM.		
Merchant Vessels over 200 tons ...	19	51,191

The number of merchant vessels over 200 tons that used the Port in February, 1934, was 120, as compared with 106 in the corresponding month last year and the total tonnage was 509,000 as compared with 479,000.

Excluding coal, salt, fuel oil and Military and Naval Stores, transhipment cargo, the total tonnage of imports in the month was 10,100 and of exports 7,000 as compared with 8,400 and 4,900 respectively for the corresponding month last year.

The total value of imports, excluding Government Stores, was Rs. 47,06,000/-, as compared with Rs. 43,25,000/- for February, 1933, and of exports Rs. 32,73,000/-, as compared with Rs. 25,96,000/-.

The total value of both imports and exports together was Rs. 79,79,000/-, as compared with Rs. 69,21,000/- for the corresponding month last year.

Imports during the month were above those for February, 1933, in the case of coffee, grain, pulse and flour, gums and resins, hardware, raw hides, raw skins, grey, white and printed or dyed piece goods, and manufactured tobacco; and below in the case of seeds, sugar, twist and yarn, unmanufactured tobacco and private treasure.

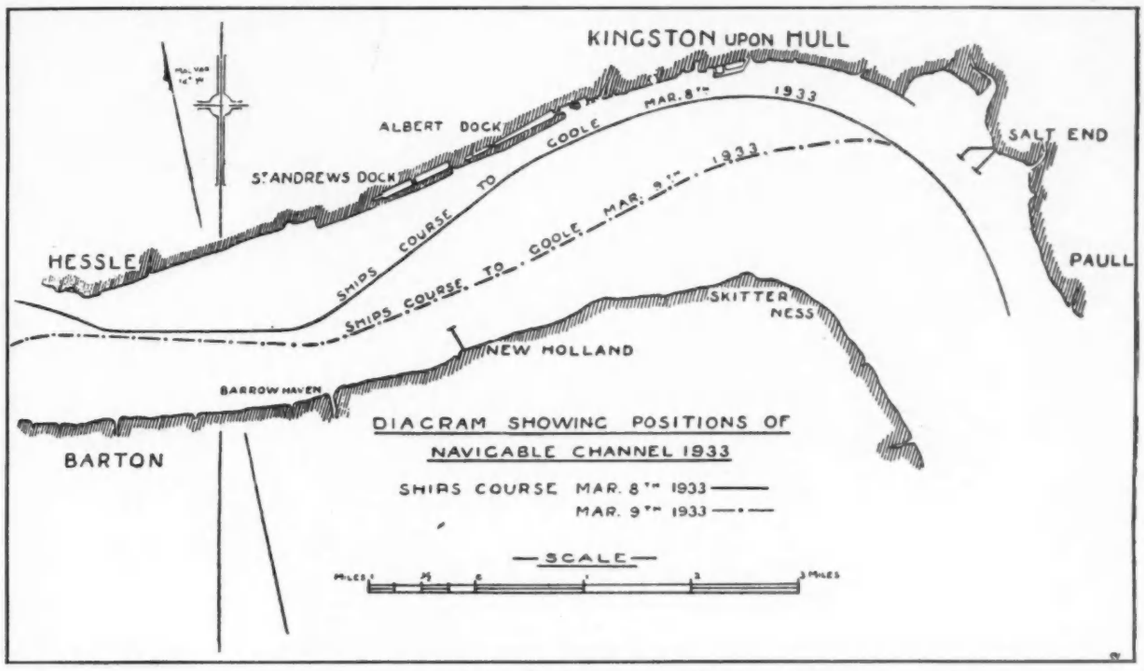
Exports were above those for February, 1933, in the case of coffee, grain, pulse and flour, hardware, raw hides, seeds, raw skins, sugar, grey, white and printed or dyed piece goods, manufactured tobacco and private treasure; and below in the case of gums and resins, twist and yarn and unmanufactured tobacco.

TRADE OF THE PORT.

Article.	Unit	Imports.		Exports	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	7,187	1,29,320	0	0
Coffee	Cwts.	10,689	3,20,923	9,211	3,02,908
Grain, Pulse and Flour	,,	50,382	2,15,380	39,107	1,68,170
Gums and Resins	,,	5,165	81,053	3,488	67,803
Hardware	—	0	27,954	0	23,600
Hides, raw	No.	4,526	6,070	2,520	3,850
Oil, Fuel	Tons	44,302	11,07,550	0	0
,, Kerosene	Gls.	34,240	24,015	4,408	3,087
,, Petrol	,,	27,884	32,261	3,040	3,535
Salt	Tons	0	0	17,053	1,82,230
Seeds	Cwts.	2,562	18,839	1,576	11,767
Skins, raw	No.	548,707	3,27,596	804,027	5,98,890
Sugar	Cwts.	33,448	1,74,017	24,782	1,28,872
Textiles—					
Piece Goods, Grey	Yds.	5,871,449	7,62,925	4,466,820	5,87,566
,, ,, White	,,	513,275	83,533	279,550	44,847
,, ,, Printed or Dyed ...	,,	843,556	1,49,038	1,127,248	2,52,858
Twist and Yarn	Lbs.	198,340	76,300	211,292	79,802
Tobacco, Unmanufactured	,,	241,864	39,900	338,520	80,327
,, Manufactured	,,	79,704	49,401	36,456	22,969
Other Articles	No. of Pkges.	58,317	8,94,084	23,727	4,00,347
Treasure, Private	—	0	1,85,828	0	3,10,040
Total ...	—	—	47,05,987	—	32,73,468

Humber Conservancy Commissioners

Engineer's Annual Report



For the first time in the history of the Humber a navigable channel has been marked out South of the Hull Middle Sand.

THE extraordinary character of the Humber estuary with its shifting sand banks and variable navigable channels is forcibly illustrated by the annual report of Mr. Arthur E. Butterfield, M.Inst.C.E., M.Inst.N.A., Engineer to the Humber Conservancy Commissioners. Its most noticeable feature, perhaps, is the revelation of the fact that, for the first time in the history of the Humber, a navigable channel has been marked out south of the Hull Middle Sand. This occurs in the section of the river between Hessle and the St. Andrew's Dock, where there has been unusual activity. Mr. Butterfield reports that the junction of the Hessle and Hull Middle Sands, which occurred in 1932, has not only been maintained but shoaling has increased. The variations have also been so frequent that the area had to be re-surveyed seven times during the past year. Owing to the governing depth between the channel at Hessle and Hull roads being reduced to three feet, it was found necessary to mark out a navigable channel south of the Hull Middle Sand, and this was done on March 9th, and provided a good, wide and straight channel from Barrow Haven to the Anson Buoy, with a minimum depth at low water of 11 ft. This channel has continued to develop the two-fathom contour, being practically continuous from a point midway between Barton and Barrow Havens to Saltend, whilst the three-fathom contour, which in 1932 only showed signs of forming, has now developed in the vicinity of New Holland Pier so as to form a continuous contour over 2½ miles in length.

Hessle Sand itself varied but little between the annual surveys of 1932 and 1933, but since June last it has been particularly unstable, and continues so. An examination in October showed a tendency for the ebb tide to cut through the northern part of this sand close to the Yorkshire shore and revealed an area, of irregular shape, dry at low water, measuring a thousand yards long by four hundred yards wide. On account of the decrease in depths over this sand, considerable interference with the ferry service was caused, and at or about low water the ferry steamers had to navigate down the river as far as the Alexandra Dock in order to find sufficient water in which to cross the three-fathom channel. Hull to Saltend is 200 ft. shorter than a year ago, but the width, 1,675 ft., is practically the same, as is also the contour west of Saltend. Little change has occurred in the three-fathom channel, Saltend to Stallingborough the width and configuration remaining unaltered. With regard to the five-fathom channel, Hull to Saltend, Mr. Butterfield reports that the western end of this contour finishes opposite to the entrance to the Old Harbour, which position is the same as in 1931, and 1,500 ft. further westward than in 1932. The average position since 1852 of the western end of this contour is 272 ft. west of the Old Harbour entrance. This channel, he adds, is very narrow until Earle's shipyard is reached, when it gradually increases in width to Saltend, where it measures 1,400 ft. The average width over this distance is 881 ft., compared with the mean average of 923 ft.

From Saltend to Stallingborough the five-fathom channel, as usual, does not extend continuously to the deep water off Killingholme, the point where it ceases to be continuous being 15,000 ft. below Saltend Jetty. This is practically the same as in 1932, and equal to the average condition since 1852. The average width is a little less, but slightly above the average. The governing depths between Hull and Immingham is 24 ft., which is two feet better than in 1932 and one foot greater than the average depth since 1852.

The ten-fathom deeps off North Killingholme Haven is larger in area than in 1932. Its area is 54½ acres, as against an average of 22½ acres and the maximum 76 acres in 1852..

The average depth within this contour is 64 ft., compared with the mean average of 62 ft. The ten-fathom contour off Stallingborough is the same area as during the past two years, viz., 153 acres, which is practically the average area since 1852. The average depth of 65 ft. is similar to what it has been during the past four years and exactly the same as the average.

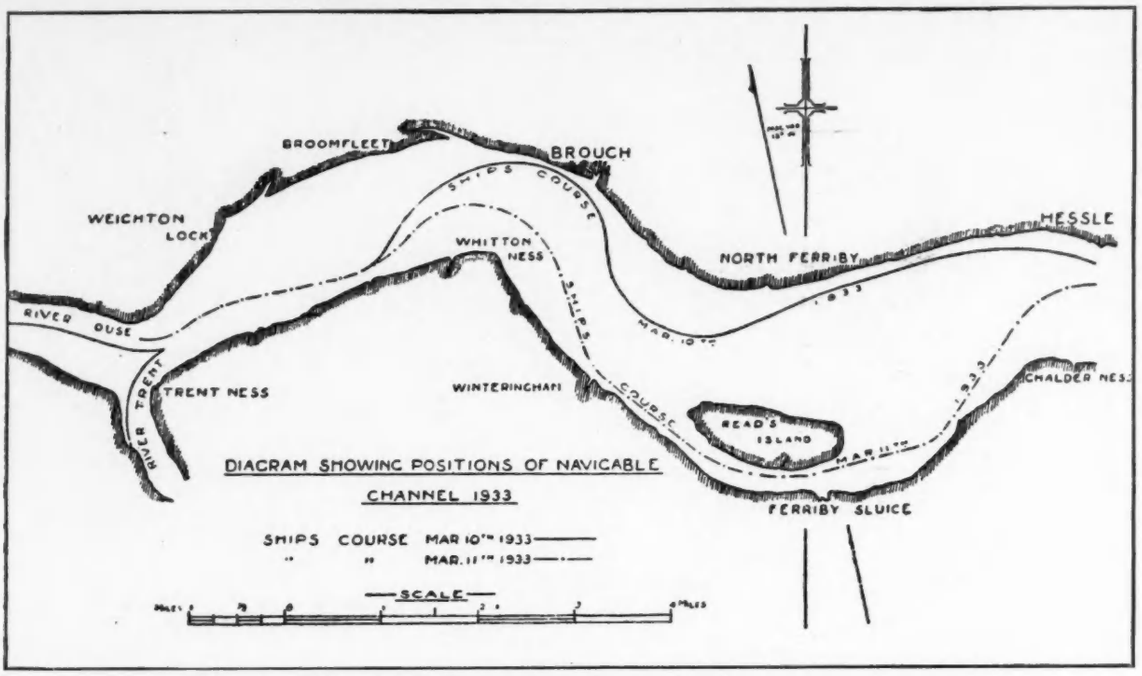
The Skitter Sand has retained its usual attenuated shape, but decreased during the year 83 acres, the area now being 888 acres. This compares with the maximum area in 1919 of 1,354 acres, and the minimum in 1910 of 602 acres, the average being 943 acres.

The general direction and configuration of Foul Holme Sand is similar to last year. Foul Holme Spit is now about 800 ft. further away from the Lincolnshire shore than in the previous year, and the area is larger, the height remaining substantially the same.

Turning now to the Upper Humber, Mr. Butterfield, in his report, states that the navigable channel into the river Trent at the date of the survey was unchanged from the previous year, but that considerable alteration has occurred since. The channel now follows the line of the new training wall, and rapid changes are taking place due to the improvement works. Dealing with the navigable channel from the confluence of the rivers Ouse and Trent to Hessle, Mr. Butterfield, describing its course, states that it is entirely different from the previous survey when it ran along the Yorkshire shore from Brough Growths to Hessle. The change over was made in March last year. The one-fathom channel is continuous from Trent Falls to Hessle, except in the vicinity of Walker Dyke, where a gap of 3,700 ft. occurs. This is very much better than the average condition.

The low water channel between the east jetty, Walker Dyke and Whitton, has increased considerably in width, this having been brought about by the erosion of some 300 ft. of its

Humber Conservancy Commissioners—continued



The Upper Humber. For the first time in the history of the Humber a navigable channel has been marked out South of the Hull Middle Sand.

southern edge of Whitton Middle Sand. The average width of the one-fathom is 820 ft., which is better than in 1932, when it was 740 ft. The best average width was in 1916, when it was 1,133 ft., and the worst in 1909, when it was 665 ft. The Redcliff Channel on the north side of the river still exists, being very regular and of good width, viz., 1,200 ft. It is, however, much subject to change off Oyster Ness, and although it continues round to Brough, there is no way out at its upper end. The upper end of the Broomflet Channel at Bowes Staith has enlarged considerably in width, and in July it cut through the sand separating it from the main channel, forming a swatchway 100 yards wide between the Faxfleet Ness and Whitton Middle Sands. Depths up to 11 ft. were found in this swatchway, attributable to the flood tide. Ancholme Channel has deepened, but the governing depth remains about the same.

The greatest depth in the Upper Humber at low water ordinary spring tides are as follow:—Ancholme Channel, 51 ft.; Hessle, 37 ft.; South Ferriby Cliff, 33 ft.; Walker Dyke (east jetty), 30 ft., and Winteringham Haven, 29 ft.

Fifty alterations in the floating marks were made during the year, all but one being in the river above Hull. Of these, seventeen were made in March when the navigable channel to and from Goole was changed from the Yorkshire side to the Lincolnshire side, between Trent Falls and Saltend.

In the section devoted to dredging operations in the Humber some remarkable figures are given, illustrating the continuous fight against the forces of Nature in order to keep the channels open to navigation. The quantity of material deposited on the Skitter News ground during the twelve months was 4,880,650 tons, dredged by the London and North Eastern Railway Company from the Hull docks, Saltend and New Holland, comparing with 5,286,690 tons in the previous year, and an average of 3,844,407 tons yearly since 1899.

Accretion occurred to the extent of 549,848 tons, which is approximately 11¼ per cent. of the total amount deposited during the year. Calculations of the cubical contents of the deposit ground, made from the annual surveys since 1902, reveal that whilst nearly 126 million tons of spoil have been deposited since that date, the accretion only amounts to 13,649 tons.

The quantity of spoil deposited at Foul Holme by the London and North Eastern Railway Company from their dock and entrance at Immingham was 977,400 tons, comparing with 593,340 tons in the previous year, the maximum quantity of 2,004,550 tons deposited in 1914, and the average yearly of 702,409 tons. Despite the deposit of nearly one million tons, there was, during the year, erosion of the deposit ground equivalent to nearly 2¾ million tons.

Close on 20 million tons of spoil have been deposited on this ground since 1907, and the net accretion since that date is equal to 25¼ million tons.

The deposit on the Burcons ground by the London and North Eastern Railway Company from their dock and entrances at Grimsby was 623,600 tons, which is considerably less than in 1932, when 825,620 tons were deposited, the maximum since 1899. The average is 563,438 tons. Calculations of the contents of this deposit ground shew that despite the deposit of over half-a-million tons of spoil during the year, there was an erosion equivalent to over 1¾ million tons. Since 1919, over nine million tons have been deposited on this deposit ground, but comparisons of the soundings reveal only an accretion equal to approximately 2¾ million tons.

The total quantity of dredging spoil deposited in the River Ouse by the Aire and Calder Navigation from their docks at Goole was 10,634 tons, compared with 14,248 tons during the previous year, and the average since 1907 of 13,458 tons.

The Port of Amsterdam

The position of the Port of Amsterdam can be seen from the following figures in regard to number of vessels and tonnage and to the goods traffic arrived and sailed, as compared with the corresponding figures of last year:—

SEAGOING VESSELS AND TONNAGE.

	ARRIVALS				SAILINGS			
	No.	Per Cent.	N.R.T.	Per Cent.	No.	Per Cent.	N.R.T.	Per Cent.
Mar. 1933 ...	275		411,809		279		433,463	
„ 1934 ...	258		400,329		266		381,756	
	−17	−6·18	−11,480	−2·79	−13	−4·66	−51,707	−11·93
Feb. 1934 ...	249		362,168		251		366,862	
Mar. 1934 ...	258		400,329		266		381,756	
	+9	+3·61	+38,161	+1·05	+15	+5·98	+14,894	+4·06
Jan-Mar. 1933	788		1,160,913		789		1,191,967	
„ 1934	785		1,153,651		807		1,175,863	
	−3	−0·38	−7,262	−0·63	+18	+2·28	−16,104	−1·35

SEAGOING GOODS TRAFFIC.

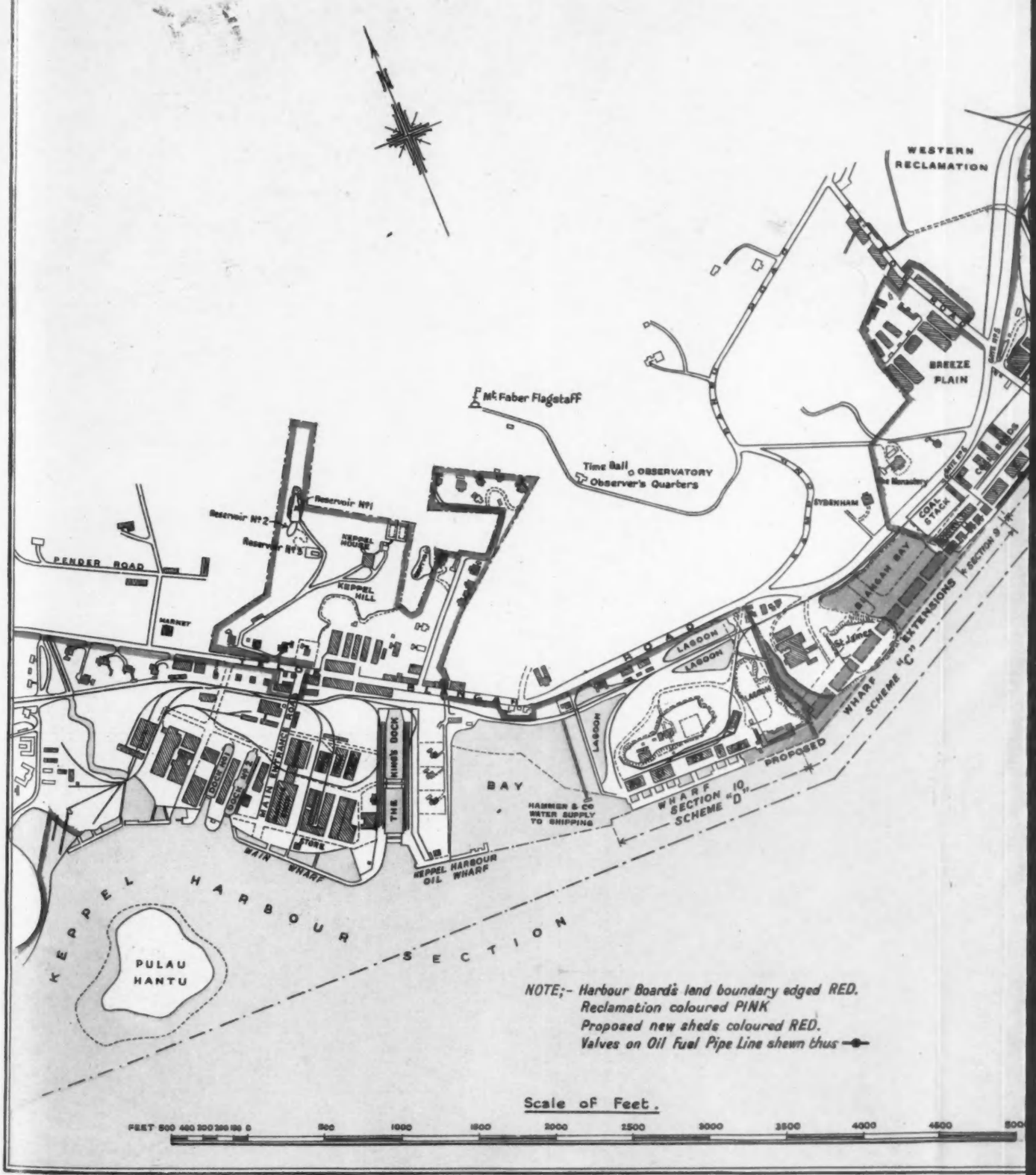
(In Tons of 1000 Kilos*).

	1 Import	2 Transit incl. in col. 1	3 Export	4 Transit incl. in col. 3	5 Total col. 1 & 3
Feb. 1933	233,678	42,055	98,811	33,925	332,489
„ 1934	324,712	60,280	127,863	56,326	452,575
	+91,034	+18,225	+29,052	+22,401	+120,086
	+38·96%	+43·34%	+29·40%	+66·03%	+36·12%
Jan. 1933	295,768	47,894	145,470	30,994	441,238
Feb. 1934	324,712	60,280	127,863	56,326	452,575
	+28,944	+12,386	−17,607	+25,332	+11·337
	+9·79%	+25·86%	−12·10%	+81·73%	+2·57%
Jan.-Feb. 1933 ...	566,535	103,257	232,148	83,236	798,683
„ 1934 ...	620,480	108,174	273,333	87,320	893,813
	+53,945	+5,917	+41,185	+4,084	+95,130
	+9·52%	+5·79%	+17·74%	+4·91%	+11·91%

* These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

PORT OF SINGAPORE.

UNDER THE JURISDICTION OF THE SINGAPORE HARBOUR BOARD.



NOTE;- Harbour Board's land boundary edged RED.
Reclamation coloured PINK
Proposed new sheds coloured RED.
Valves on Oil Fuel Pipe Line shewn thus —●—

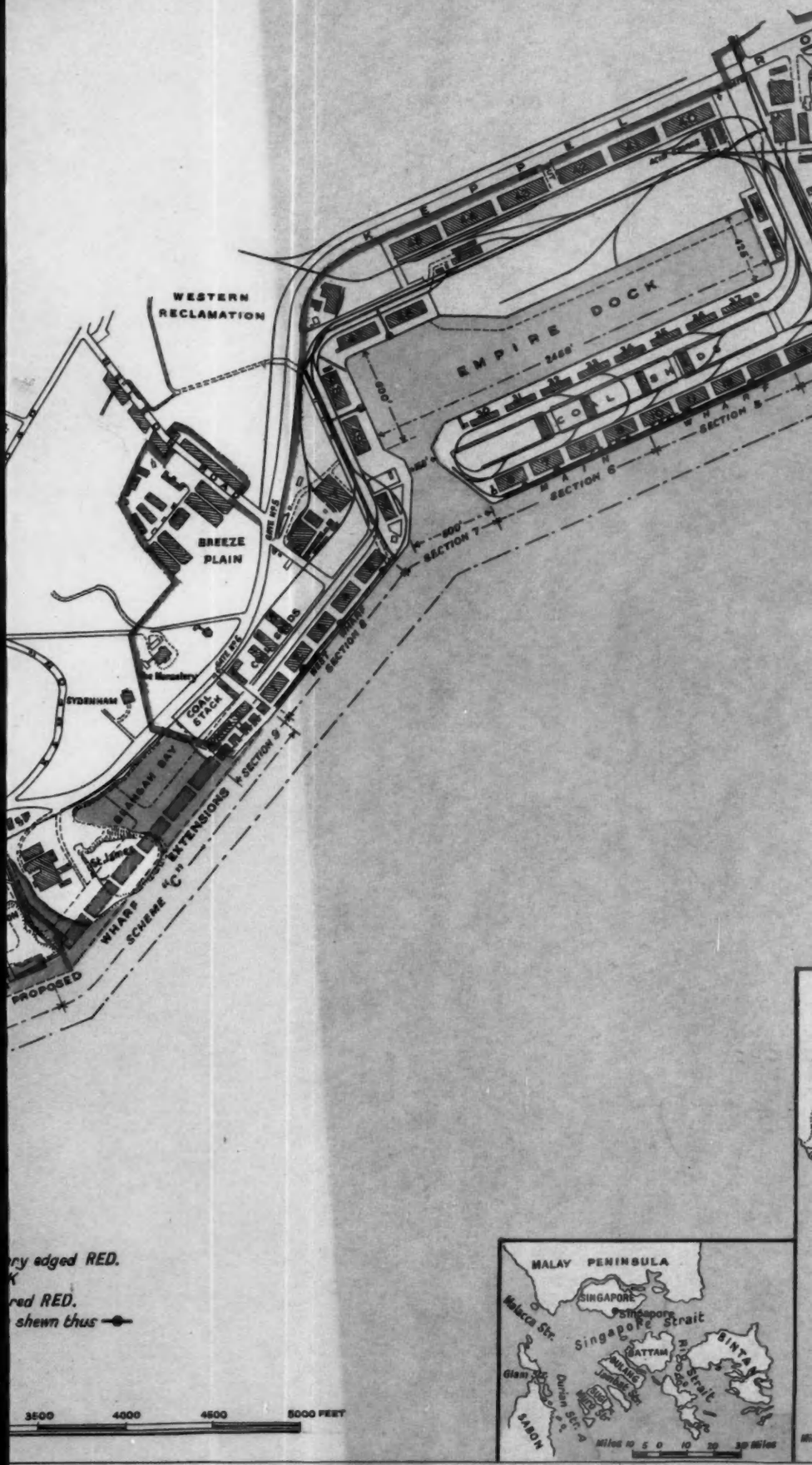
Scale of Feet.

FEET 500 400 300 200 100 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000

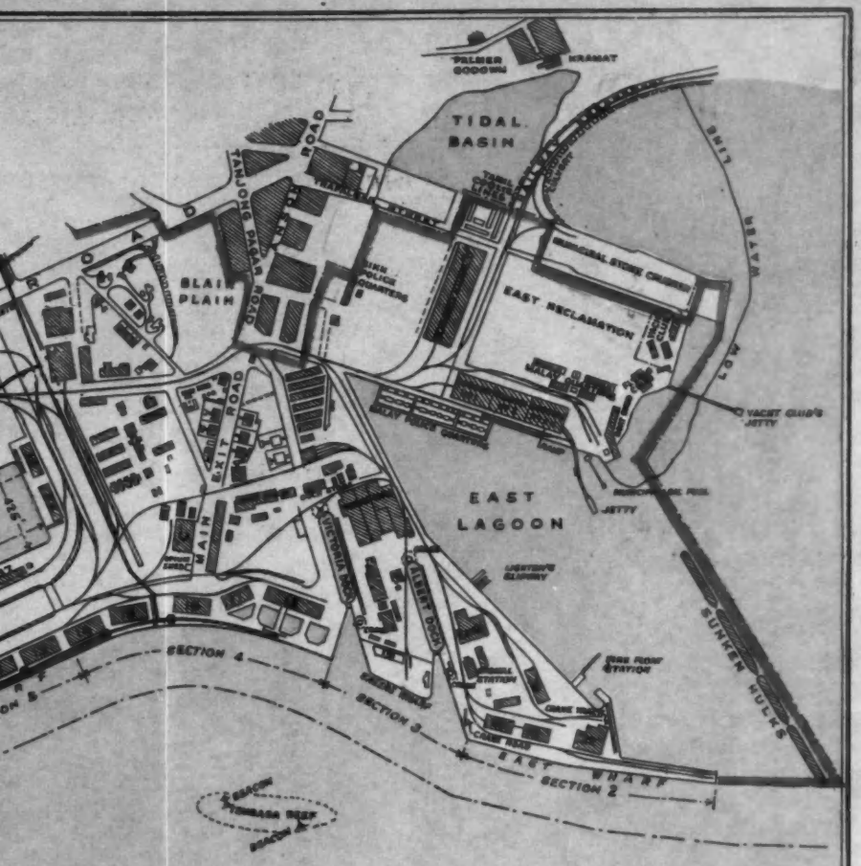
WARD & FOXLOW, LITHO. HAR

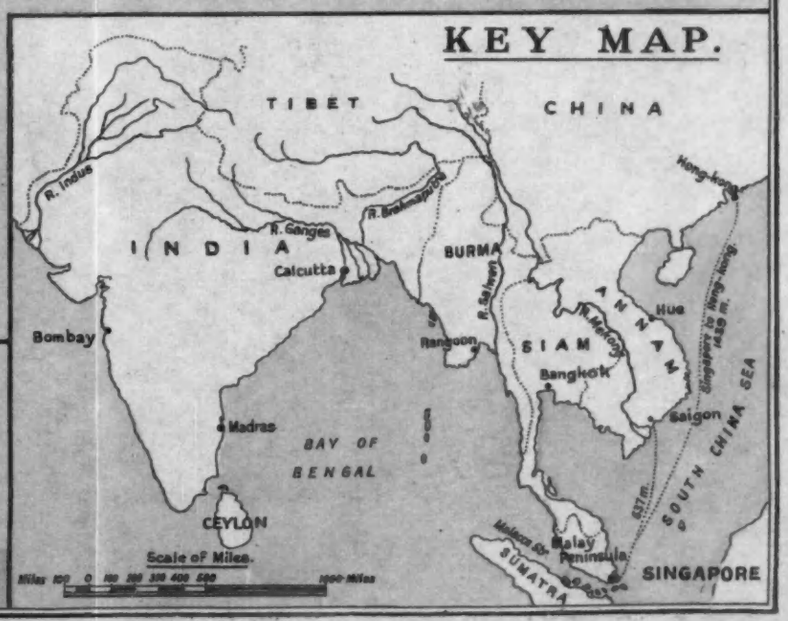
...PORE.

...OUR BOARD.



WARD & FOSLOW, LITHO. HARCOURT ST, MARYLEBONE, W.1.


TIDAL BASIN
EAST RECLAMATION
BLAIR PLAIN
EAST LAGOON
MAIN ROAD
EXIT ROAD
SUNKEN HULKS
SECTION 4
SECTION 3
SECTION 2
EAST WHARF


KEY MAP.
TIBET
CHINA
INDIA
BURMA
SIAM
ANNAM
Calcutta
Bombay
Madras
Rangoon
Bangkok
Hue
Saigon
Hong-kong
BAY OF BENGAL
CEYLON
SOUTH CHINA SEA
Malay Peninsula
SINGAPORE
SUMATRA
Scale of Miles.

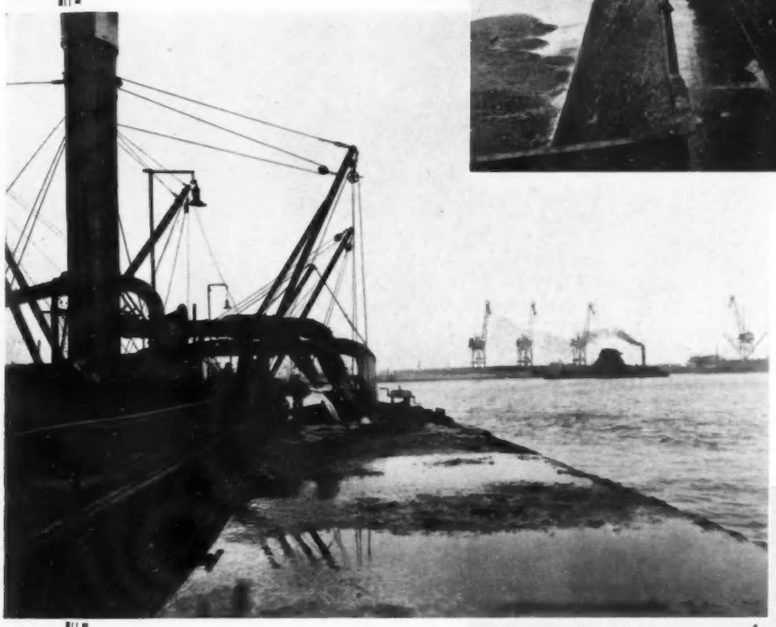
PORT OF SINGAPOR

UNDER THE JURISDICTION OF THE SINGAPORE HARBOUR BOARD.

Why dump rich spoil into the sea if it can be dredged and pumped ashore direct, or from Barges, upon waste lands AT LESS EXPENSE?

Port of Bromborough Dredging & Reclamation Contract

1.
Loading the Reclamation Barges



2.
Barge load of spoil alongside Reclamation Dredger

3.
Pumping spoil

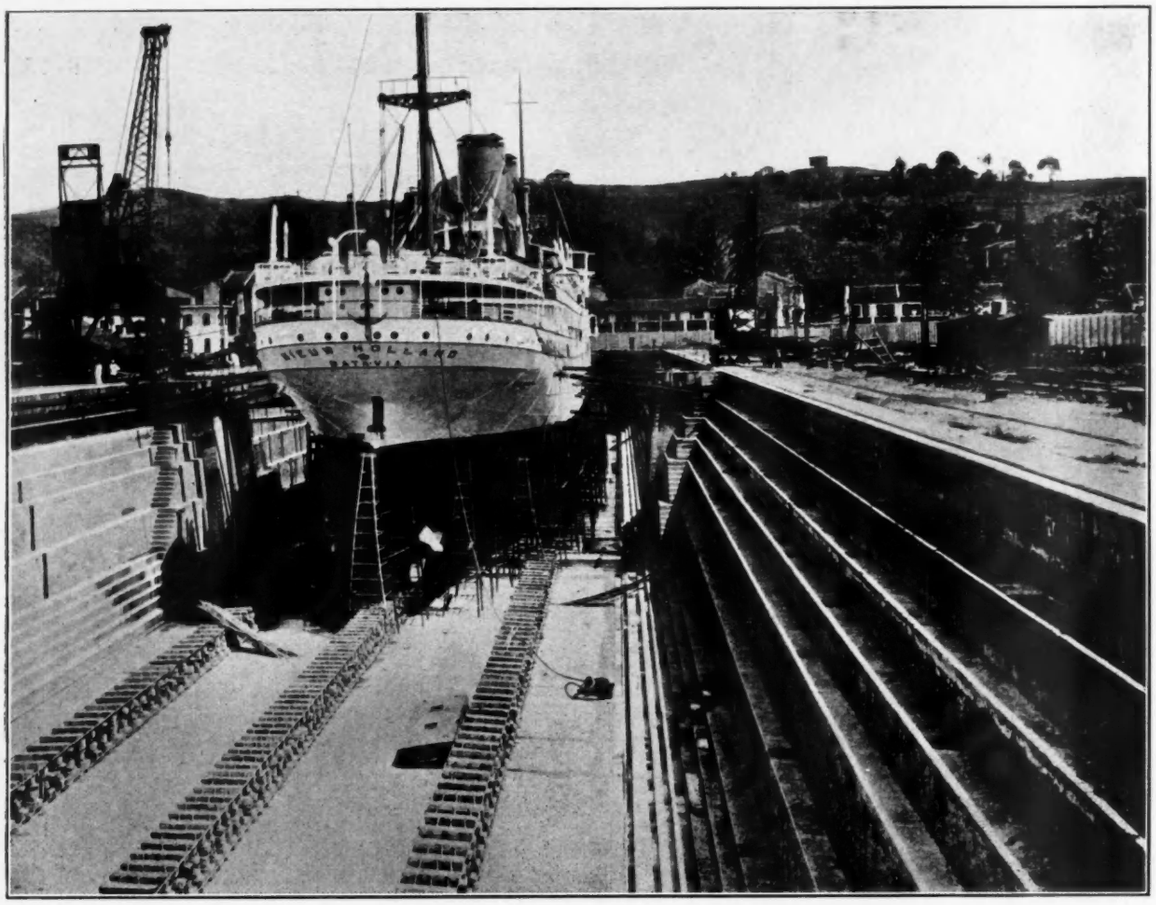
WESTMINSTER DREDGING COMPANY LTD.

32, VICTORIA STREET, WESTMINSTER, LONDON, S.W. 1

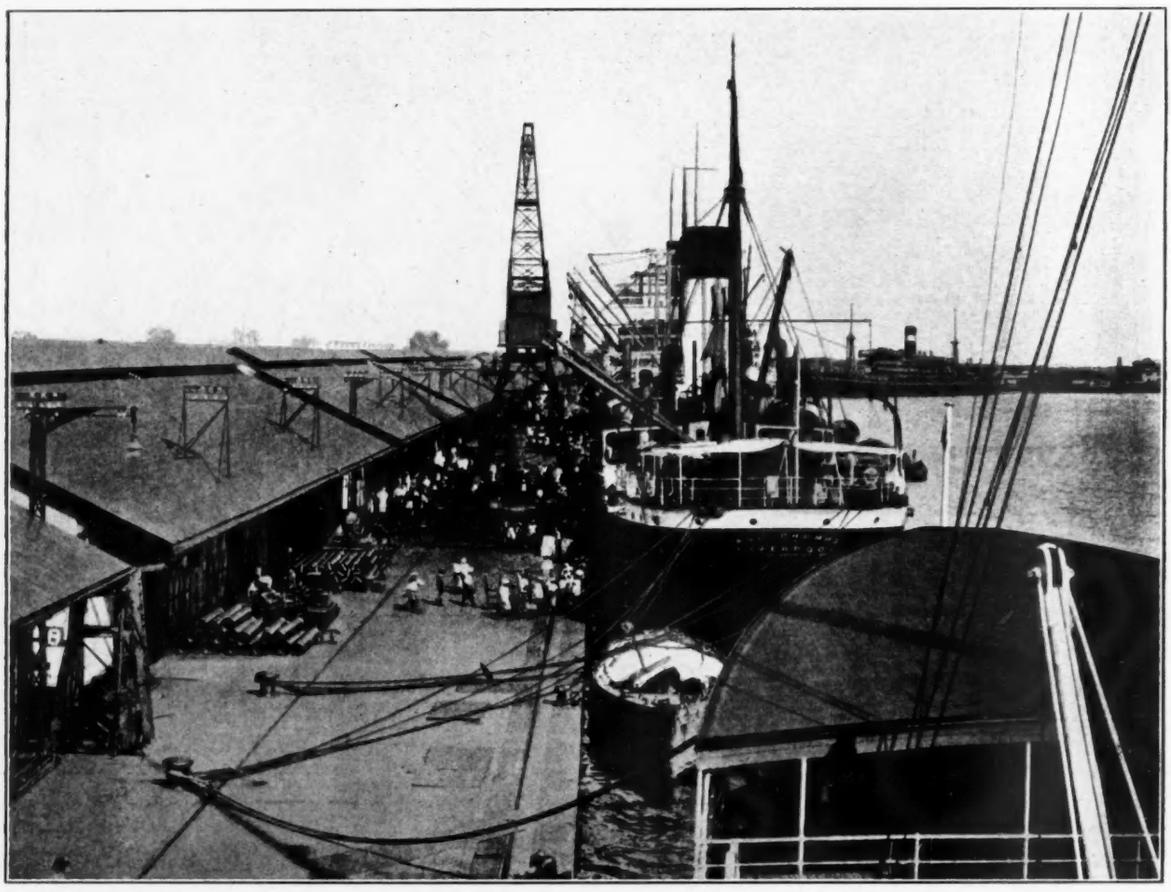
Telephone—Victoria 9894
Telegrams—Dredgeria, Sowest, London

Cables—Dredgeria, London
Code—A.B.C. 5th Edition

The Port of Singapore



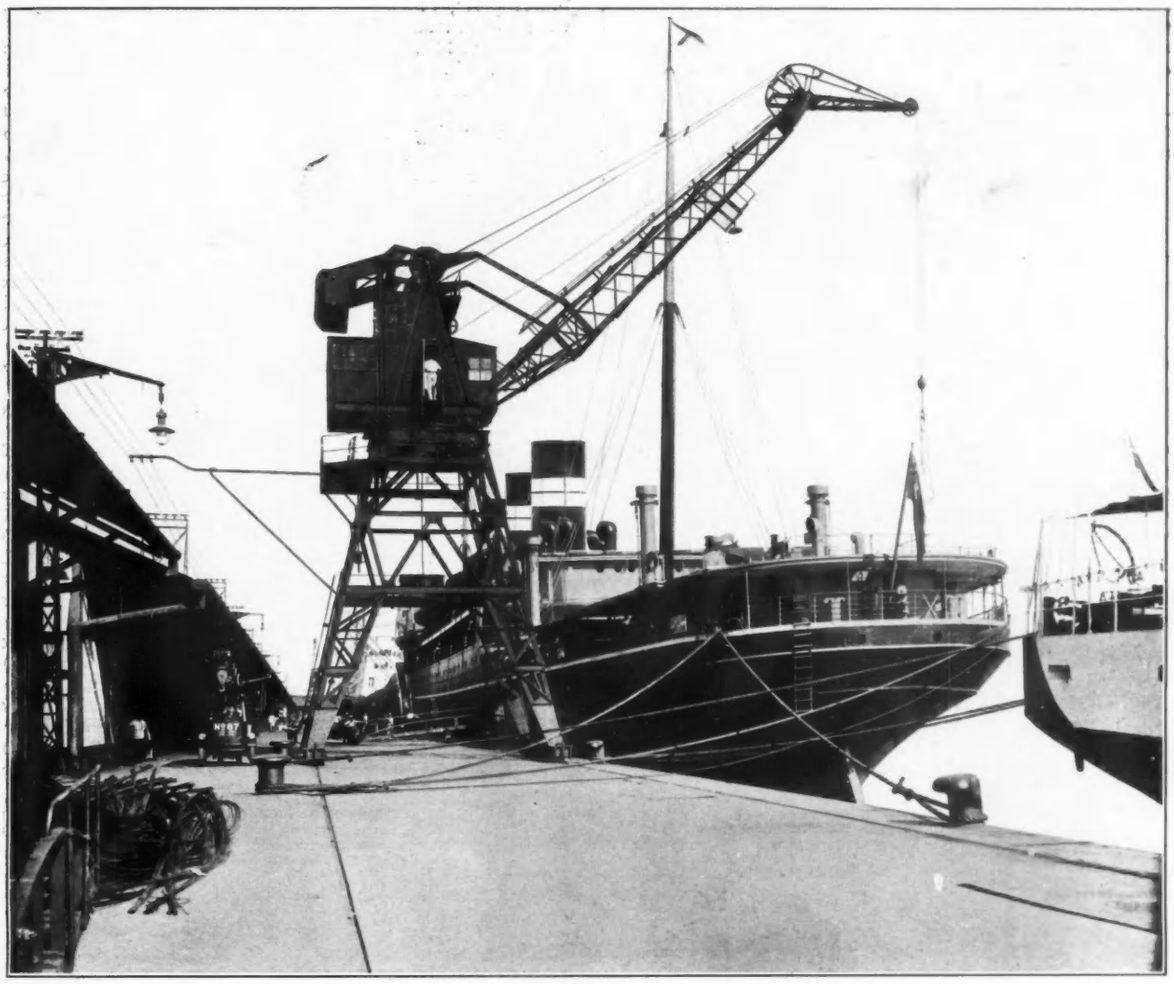
King's Dock, Singapore.



Main Wharf, Tanjong Pagar.

The Port of Singapore

By G. W. A. TRIMMER, M.Inst.C.E., M.I.Mech.E., M.Inst.T. (Chairman and General Manager, Harbour Boards, Straits Settlements)



Singapore Harbour Board: 2-ton Electric Cranes on Main Wharf.

THE Island of Singapore is 88 miles North of the Equator and contains an area of 217 square miles; the population numbers some 567,000 persons and is probably the most cosmopolitan one in the world, about three-quarters of the people are, however, Chinese, and an eighth Malays, while the Europeans total about 8,200.

There is a continuous stream of passengers of various nationalities who land and spend a day or so in Singapore when passing through on ocean voyages or making coastal connection. The deck passengers are Chinese, Indians (including Tamils and Malabaris), Singalese, and Javanese estate labourers, also Malay and Javanese pilgrims en route to Mecca.

Many languages are heard, all manner of habits are seen, and numerous varieties of food are consumed; truly, a more varied moving population it would be hard to find.

The approach to the Harbour of Singapore is one of the most beautiful in the world, and probably one Rio de Janeiro, Sydney, and, perhaps, Hongkong, in any way surpass the panorama of views that meets the eye when entering the port of Singapore.

The harbour is practically land-locked by islands, and these afford such protection that until the reconstruction of the wharves was put in hand some twenty-two years ago, the berthing accommodation consisted only of wooden wharves on wooden piles. The difference between the rise and fall of ordinary spring tides is 9 ft.

A glance at the map confirms Singapore's designation as "The Crossroads of the East."

The Charter or Port Policy may be said to have been given or laid down by Sir Stamford Raffles at the head of his report to the Government of India, when he wrote in 1819:—

> "I have declared that the Port of Singapore is a free Port and the trade thereof open to ships and vessels of every nation free of duties, equally and alike to all."

In 1820 Col. Farquhar reported:—

> "One of the principal Chinese merchants here told me, in the course of conversation, that he would be very glad to give five hundred thousand dollars for the revenues of Singapore five years hence.
>
> "Nothing can possibly exclude the rising trade and general prosperity of the infant Colony. Merchants of all descriptions are collected here so fast that nothing is heard in the shape of complaint but the want of more ground to build on."

The Port Limits of Singapore cover an area of 23,168 acres, or 36¼ square miles, and consist of an Inner Harbour, Outer Harbour and Western Anchorage (see Supplement).

A wonderful variety of vessels is to be seen in the Harbour; in addition to the large ocean-going passenger and cargo steamers there may be seen at all times some hundred or so local coasting steamers, several of about 800 tons burden but mostly about 100 tons only, the adjacent Dutch Islands with their many inlets and settlements requiring a large service of small vessels for carrying food supplies and collecting produce. There is also a large number of Chinese junks, and native six-oared fishing boats, the rowers standing facing the direction in which the boat is proceeding.

Although the majority of ocean-going steamers are berthed at the wharves of the Singapore Harbour Board, many vessels discharge and load in the Inner and Outer Harbour, necessitating a continual flow of lighters to and from the warehouses on the banks of Singapore's short and narrow river and the Telok Ayer Basin.

The Inner Harbour is protected from the North East Monsoon by a mole of granite rubble about a mile long. The capacity of the Inner Harbour allows forty coasting vessels, varying in length from 150 ft. to 315 ft., to lie at single anchor within the shelter of this breakwater.

Situated on islands at the extreme westward limits of the Port are two oiling stations which comprise extensive storage

The Port of Singapore—continued

and bunkering facilities. That on Pulau Bukom is owned by the Asiatic Petroleum Co. (S.S.), Ltd., and that on Pulau Sebarok by the Standard Oil Co. of New York.

On West St. John's Island at the Southern approaches to the Port is sited the Quarantine Station; this is reputed to be one of the most up-to-date in the world, and is recognised as second only in size to Ellis Island, New York.

Government maintains Signal Stations at Fort Canning, Mount Faber and Tanjong Berlayer. All these Stations are in direct telephonic communication with the Port Offices in Fullerton Building and the wharves of the Harbour Board.

A Government observatory is situated on Mount Faber, which directs the time signals. These signals of the most modern type for the use of shipping and worked electrically from this Station are located at Fort Canning, Mount Faber and the top of Fullerton Building. Electrically-lit night signals, which are visible for a considerable distance seaward, have recently been installed at Mount Faber.

The lighting and buoyage of the Port and its approaches have been much improved and modernised of recent years, and now compare favourably in that respect with any port in the world.

Merchant ships representing a tonnage of 10,254,150 tons, entered the Port of Singapore in the year 1923. During the year ended 1931 merchant ships representing a tonnage of 14,631,765 tons, entered the Port.

Regular callers at Singapore from the United Kingdom and the Continent are Alfred Holt's Blue Funnel Line, the P. & O., Glen, Ben and City Lines, and the Messageries Maritimes, Nippon Yusen Kaisha, Nederland Royal Mail, Rotterdam Lloyd, East Asiatic, Lloyd Triestino and Osaka Shosen Kaisha steamers.

The British India Steam Navigation Company maintain a regular service between Calcutta and Japan. Their passenger steamers, of a high order, also run regularly to Rangoon and Madras, mail train connection with Bombay being made from the latter port. Messrs. Jardine Matheson, and many other companies, operate to and from China ports.

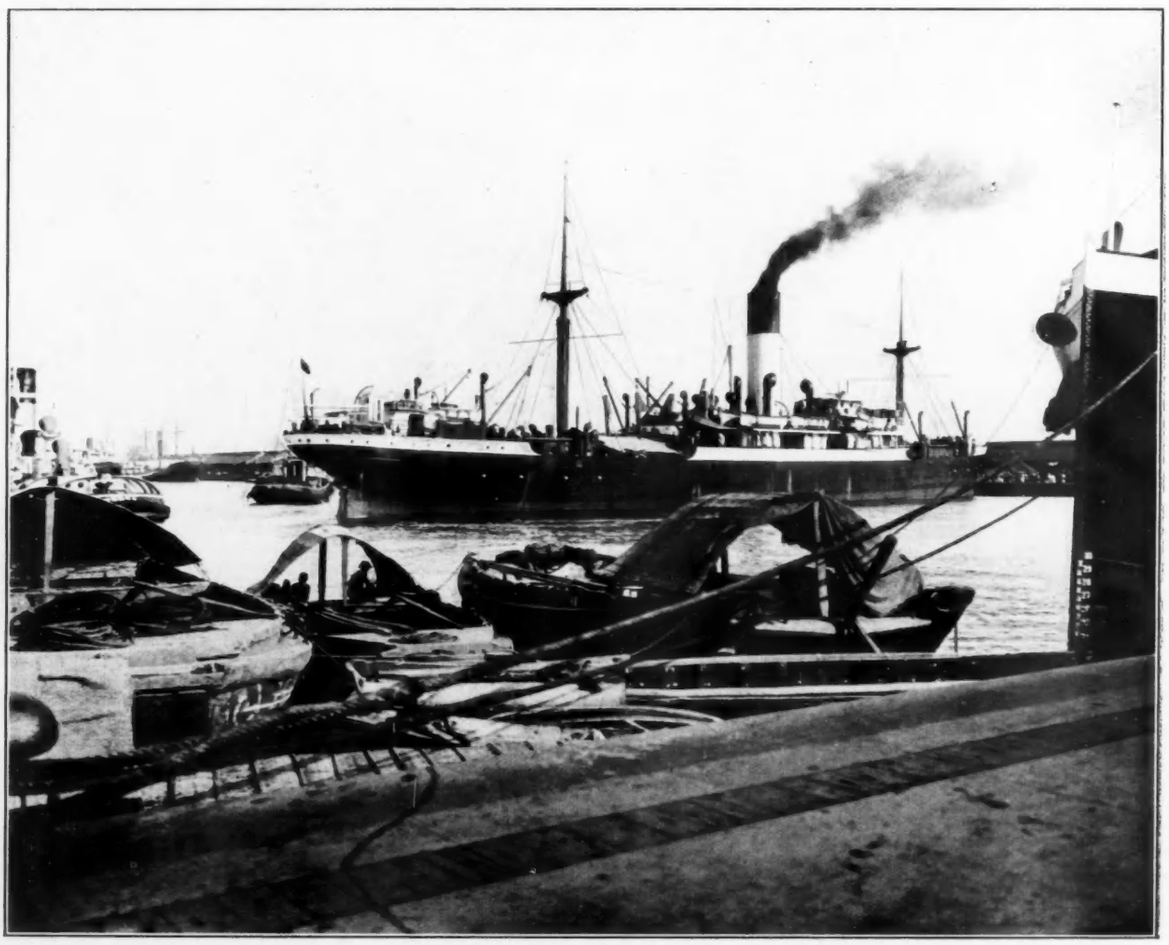
The Dollar Steamship Lines, with steamers arriving at Singapore every two weeks, maintain a passenger and cargo service to the United States *via* Ceylon, India and Mediterranean Ports. There are cargo services to New York *via* the Mediterranean by vessels of the Holt and Ellerman Lines, Prince Line, Dodwell Castle Line and Kerr Steamship Co.

There is a first-class passenger and cargo service to Australia *via* the East Coast by Messrs. Burns Philp Co., and Messrs. Koninklijke Paketvaart Maatschappij. Regular passenger and cargo steamers also run to Fremantle *via* Western Australia ports.

An excellent coastal service is carried out by the Straits Steamship Company to Federated and Unfederated Malay States ports, also to Borneo and Bangkok, whilst direct services to Java and Sumatra are maintained by the modern and well-equipped steamers of the Koninklijke Paketvaart Maatschappij.

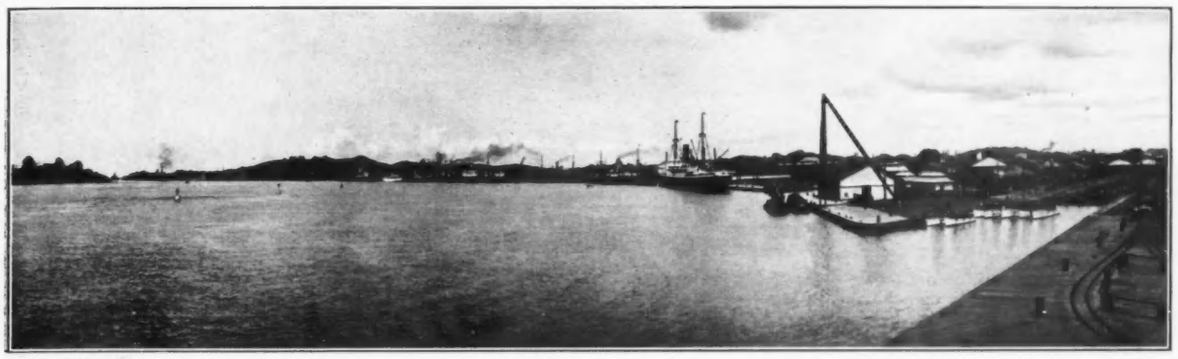
A brief reference to the early history of the Dock undertakings at Singapore may be of interest. In the year 1859, the first graving dock, No. 1, length 396 ft. 6 ins., was completed, and the Victoria Dock, length 484 ft., was completed in the year 1868. The Dock and Wharf business was for over forty years conducted by two Companies (the Tanjong Pagar Dock Co., and the New Harbour Dock Co.). The former Company suffered an anxious period in its early years, and at brief intervals later, but generally both Companies flourished and steadily developed while paying dividends to their shareholders, averaging nearly 12 per cent. per annum. These Companies formed a joint-purse agreement in the year 1881, and amalgamated in the year 1899, when by absorption of Reserves the joint capital was doubled to $3,700,000 fully paid. The Company's undertaking was, however, by direction of the Colonial Office, expropriated by the Straits Settlements Government in the year 1905 with a view to greatly developing the Docks and Wharves, and for Government control of the Port of Singapore in Imperial interests. The Government offered $240 per share (the market value immediately prior to expropriation, being about $230 per share) to the Company, which was declined, and eventually had to pay some $760 per share in terms of an award by Sir Michael Hicks-Beach, P.C., M.P., the Umpire (later The Right Honcurable Michael Edward Viscount St. Aldwyn), as the result of protracted arbitration proceedings conducted in both London and Singapore, and extending over a period of twelve months, and constituting a " cause celebre " in arbitration proceedings between a Dock Company and Government.

The Government action, however, in acquiring in 1905 this hitherto privately-owned undertaking and constituting a Harbour Board for the purpose of administering it, has been amply justified, both financially and otherwise. Development

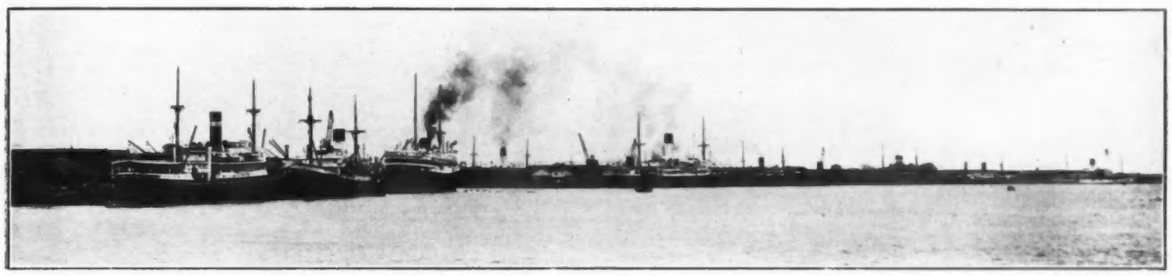


Singapore Harbour Board: Shipping in Empire Dock.

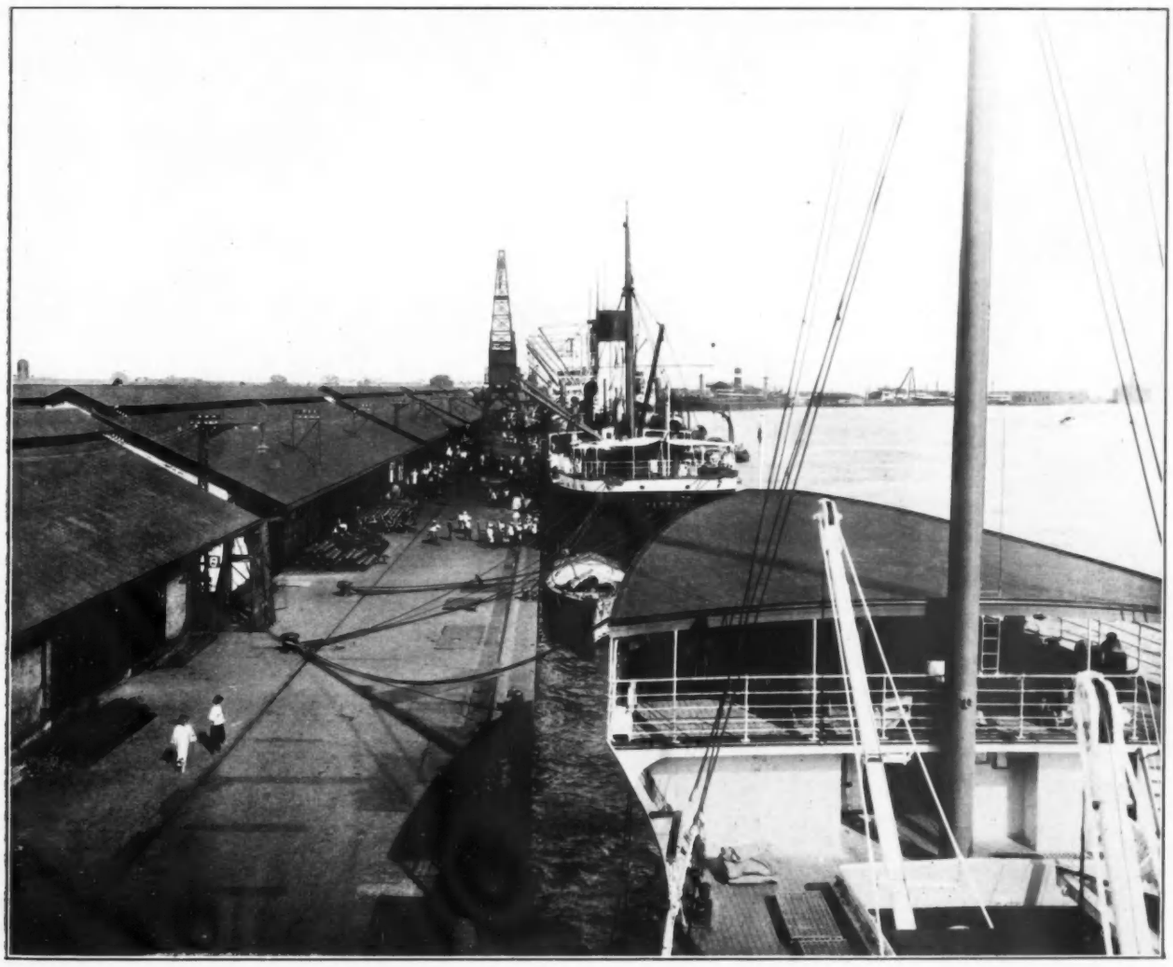
The Port of Singapore



View of Western Section, Singapore Harbour.

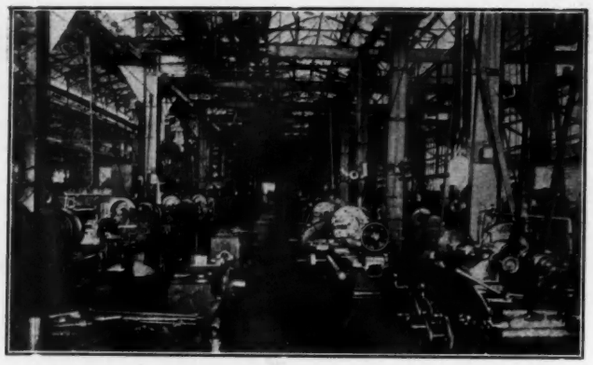


Shipping alongside Tanjong Pagar Wharves.

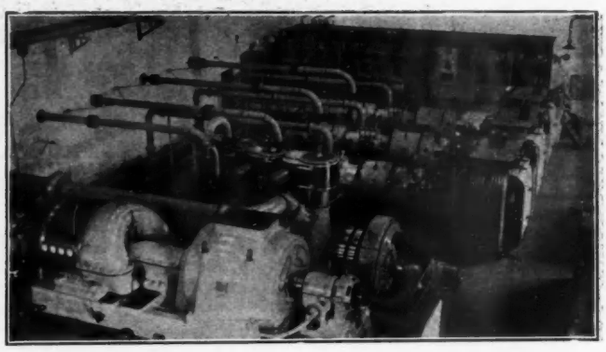


Singapore Harbour Board: Main Wharf.

The Port of Singapore—continued



Singapore Harbour Board: Eastern Bay of the Machine Shop.



Singapore Harbour Board: Electric Power Station, showing Brush, Ljungstrom and Parsons Turbines.

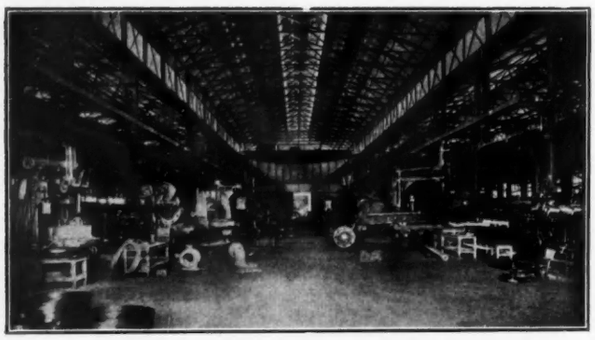
on bold lines, the provision of additional Docks and the improvement, rebuilding and extension of the wharves, have made the Port of Singapore second to none in the East.

A very interesting treatise on the Dock undertakings in Singapore is to be found in " One Hundred Years of Singapore," which is an historical account, in two volumes, of the capital city of the Straits Settlements from its foundation by Sir Stamford Raffles on 6th February, 1819 to 6th February, 1919. The work was published in 1921 by John Murray, London.

The pilotage service is under the direction of a Pilot Board appointed by the Governor with the Master Attendant as President.

Singapore is a free port, there being no port, harbour, dock, town or light dues. Customs duties are levied on opium, alcoholic liquors, tobacco and petroleum only.

The Port, Shipping and Clearance Offices are all situated on the first floor of Fullerton Building, overlooking the Inner Harbour.



Singapore Harbour Board: Central Bay of the Machine Shop.

A large and well-equipped modern Sailors' Institute, controlled by Government, is situated in Anson Road in the approach to the Harbour Board and Docks. Officers and seamen of all nationalities are welcome. Lawn tennis, billiards, whist drives, concerts, dances and cinema entertainments are arranged at frequent intervals, free of charge. The Mission to Seamen, by permission of the Committee of the Institute, is also housed in this building.

The Singapore Harbour Board.

The Singapore Harbour Board controls all the public wharves and dry docks in Singapore, the Estate comprising over 690 acres of land, much of which is available for future development of the docks and wharves and their adjuncts. The Board is constituted under an enactment by the Governor of the Straits Settlements, entitled Ordnance No. 130 (Ports). The Board consists of a chairman, deputy-chairman and three to seven other members, all appointed by the Governor of the Colony. By-laws and rates and charges are made by the Board, subject to the approval of the Governor-in-Council.

The Board pays to Government interest at the rate of 4 per cent. per annum on the capital cost of the Undertaking and loans for New Works, and contributes to a sinking fund therefor at the rate of 1 per cent. per annum.

The Assets and Capital Outlay of the Board at June 30th, 1932, totalled $79,791,202, i.e., £9,308,973 sterling (exchange being fixed by Government at 2s. 4d. per Straits Settlements dollar).

The Board has its own Police Force, and Fire Brigade fully equipped with modern motor fire floats, motor fire engines, smoke appliances, etc. The Board lights its premises throughout and controls all traffic thereon, does all road making and repairing. It also undertakes the entire sanitation and scavenging of the premises and maintains a medical staff and motor ambulance.

The following is a concise description of the Board's Wharf and Dock accommodation:—

WHARF DEPARTMENT—QUAYAGE.

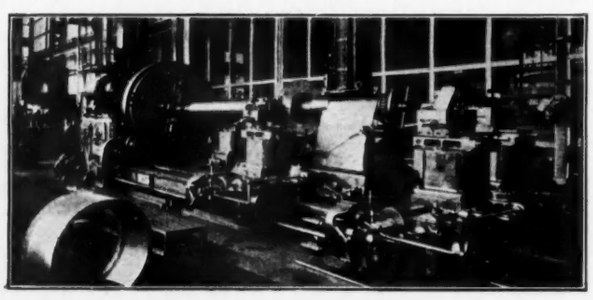
POSITION	Depth of Water at L.W.O.S.T. less than 25ft.	Depth of Water at L.W.O.S.T. 25 feet to 30 feet	Depth of Water at L.W.O.S.T. 30 feet	Depth of Water at L.W.O.S.T. 33 feet and over
Jardines Wharf	380 ft.	—	—	—
West Wharf	—	—	—	1,260 ft.
Main Wharf	—	—	—	3,152 ft.
Sheer's Wharf	—	330 ft.	—	—
East Wharf	955 ft.	290 ft.	—	—
Empire Dock (Area 24¾ acres)	—	—	3,52 ft.	—
Oil Wharf, K. H.	—	450 ft.	—	—
Section 10 (late P. & O. Wharf)	—	800 ft.	—	—
Total: 11,139 lineal feet of wharves	1,335 ft.	1,870 ft.	3,522 ft.	4,412 ft.

The Suez Canal taking vessels of 31 ft. draught indicates the requirements of Eastern ports in respect of depth of water. The walls of the Empire Dock are designed to permit of it being deepened from 30 ft. to 33 ft. L.W.O.S.T.

There is storage capacity for about 260,000 tons of cargo and some 150,000 tons of coal on the Board's premises.

The Board owns steam tugs with complete fire and salvage plant; sheer legs with maximum lifting capacity of 60 tons; electric, stationary, steam and pontoon cranes, launches and other appliances (including a fleet of 50 lighters, mostly of 50 tons capacity) for the expeditious handling of cargo.

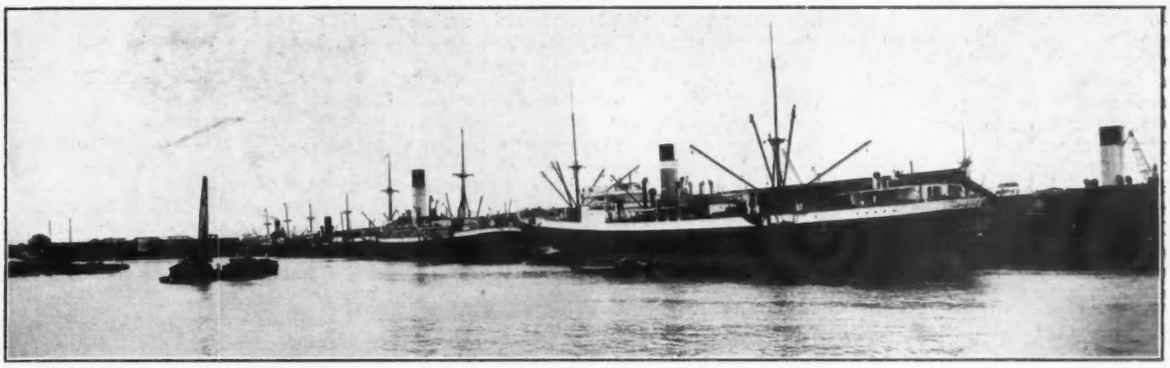
The railway system of some fourteen miles of metre gauge laid track connects the whole premises with the Federated Malay States main railway system for the interchange of traffic.



Armstrong Whitworth Crankshaft Lathe, Singapore Harbour Board's Workshops.

Churchill Grinding Machine, Singapore Harbour Board's Workshops.

The Port of Singapore—continued



Shipping in Empire Dock.

The Board obtains fresh water of excellent quality direct from the Singapore Municipal mains and by means of its own system of pipe lines and connections throughout the premises supplies it to shipping at all berths at the wharves and docks as required.

The warehouses for the bonded storage of dutiable liquors, tobacco, etc., are of considerable extent, and have recently been augmented by the additional construction of a fire-proof ferro-concrete warehouse with a floor space 500ft. by 150ft. in extent.

Cold storage is provided on the Board's premises by an independent limited liability Company to whom the Board has leased land, and this Company imports regularly large quantities of meat, provisions and fruit from Australia.

The Board has leased an area of land on the East Reclamation to the Asiatic Petroleum Co. (S.S.), Ltd., who have erected thereon tanks for the storage of fuel and diesel oil. The tanks are connected to the Main Wharf (Sections 4, 5 and 6), the north and west walls of Empire Dock (Section 7), and the West Wharf (Sections 8 and 9), by means of 8 ins. and 10 ins. diameter pipe lines, through which vessels at these sections of the Board's premises are supplied with fuel and diesel oil. The pumps are able to bunker vessels at Tanjong Pagar Wharves at the rate of 500 tons of oil fuel per hour.

The Board have erected adjacent to the West Wharf (Section 8) four 500-ton tanks, together with an up-to-date pumping and steam-heating plant for the handling of Palm Oil in bulk. This installation has been leased to Messrs. Guthrie and Co., Ltd., the Managing Agents for the Malayan Palm Oil Bulking Co., Ltd.

All labour at the Board's wharves and Dry Docks is supplied by the Board, and coal and general cargo are usually handled with the aid of vessels' own gear. There are three quick-working portal electric cranes on the Main and West Wharves, also one 15-ton electric crane and a stationary sheer legs capable of handling lifts up to 60 tons.

Coal is stored under covered sheds or in the open, and is owned by some dozen steamship owners or merchants. It is chiefly South African, Japanese, Australian, Indian and Welsh, but there is a variety of supplies from local sources such as Borneo, Sumatra, Labuan and Sarawak.

Coal is the only bulk cargo handled at the Board's premises, and the general cargo is of such a varied assortment that the 45 ft. to 50 ft. of quay space between the coping stone and the side of the transit shed is essential for expeditious handling and sorting.

The special feature at the Singapore Wharves is that bunkering operations can be carried on from the shore side (and from the seaside as well) simultaneously with cargo working, thus accelerating the despatch of steamers from the wharves and avoidance of pilotage and other costs for removal to a special bunkering wharf.

The method of handling the coal between ship and stack is for each pair of coolies to carry, by means of a bamboo pole resting on their shoulders, a basket of coal containing 160 lbs. (14 baskets to a ton). The Board pays and charges fixed rates for handling coal, but the Labour Contractor pays so much per basket as it passes the scale on the wharf, the rates varying according to the volume of work on hand, the distance of the carry and the heights of the stack and ship.

A trade peculiar to the East is the conveyance of deck passengers on ocean voyages, and large numbers are conveyed in this manner between Singapore and both China and India, also to neighbouring ports, the larger ships carrying two to three thousand each. Further, pilgrims to Mecca travel as deck passengers, and about 12,000 of them embark or disembark at the Board's Wharves annually. When embarking they take with them provisions sufficient for their requirements during the whole journey.

Rates and Charges.

There are no Port, Harbour, Dock, Town or Light dues, nor are any berths for vessels or storage places specially appropriated.

The Board charges for the use of the wharves at a rate per ton on the quantity of coal and general cargo discharged or loaded, superseded, however, in a few instances, by a minimum charge against the vessel at a rate per day on the gross tonnage of the vessel when the combined wharfage charges on coal and general cargo do not equal the minimum charge.

The ordinary charges against steamers, mainly for wharfage and stevedorage on general cargo, amount to about $0.95 (2s. 2½d.) per ton, but on coal, labour discharging only is payable by the ship, the owner of the coal paying the inward and outward wharfage and all labour on the wharf.

Free storage is allowed for goods removed from the Transit Sheds within 72 hours from the time the vessel completes discharge, and there are further substantial concessions for transhipment cargo.

Dry Docks.

	Extreme length — Length on Bottom	Breadth at Entrance	Height of Sill above Bottom of Dock	Depth on Sill at High Water Ordinary Spring Tides
	ft. in.	ft. in.	ft. in.	ft. in.
No. 1 Dock	396 6 380 6	47 4 45 0	4 0	14 0
No. 2 Dock	463 0 440 0	64 0 52 0	2 0	17 0
Victoria Dock	484 9 460 0	64 9 56 5	2 9	20 0
Albert Dock	496 7 471 0	59 6 55 9	3 0	21 0
The King's Dock	879 0 873 0	100 0 93 0	4 6	34 0

All the dry docks are closed by caissons, and the King's Dock is divided by an intermediate caisson into two docks of 486 ft. and 325 ft. each, and the equipment includes a 30-ton electric travelling crane.

The Board's workshops, all of which are served by overhead electric travelling cranes, are extensively equipped with up-to-date appliances, electrically driven, and are capable of effecting repairs to vessels of the largest class, and their machinery, either steam or motor driven. Machines, capable of grinding either externally or internally the largest parts of motor machinery, are installed. Castings and forgings of the largest size can be made on the Board's premises. Welding, either by the oxy-acetylene flame or by electric arc, is carried out under the supervision of qualified European welders.

The Board possesses its own steam-driven power station, generating a three-phase alternating current supply at 3,100 volts 50 cycles. This is transformed down in various substations to 400 volts for power and 230 volts for lighting. The station is well equipped with modern turbines (three Brush Ljungstrom, one Fraser and Chalmers and one Parsons), having a total capacity of some 5,000 k.w. with ample provision for extension as required. The boiler house is also equipped with four Babcock and Wilcox and two Niclausse

The Port of Singapore—continued

boilers of the Marine-Land type, complete with self-contained superheaters, economisers, and mechanical stokers. In addition to the normal A.C. supply of 400 volts for power and 230 volts for lighting, provision is made by means of suitable motor generators for giving ships supplies of direct current at various voltages from 65 to 230 whilst they are undergoing docking or repairs, connection being made direct to the ship's switchboard. Supplies of direct current are also available by the use of motor generators at any point of the wharves and docks for the purpose of electric welding. The electrical workshop is equipped with modern electric welding and cutting plant, and all classes of electrical repairs, from small instrument work to the largest of motors or generators, are carried out.

Automatic telephones are fitted throughout the premises and on vessels alongside the wharves, in direct communication at all times with the town exchange *via* the Board's own automatic exchange.

Salvage Equipment.

The Board's salvage equipment consists of two powerful oil-burning salvage steamers, the "Varuna" and "Tunda." The former is fitted with a salvage and fire pump having a capacity of 600 tons per hour, and the latter with a pump having a capacity of 300 tons per hour. Both vessels are fitted with "Filtrators," which enables them to supply steam for an indefinite time without the necessity of refilling their water tanks; also electric searchlights. A large number of petrol, and steam-driven portable pumps ranging from 4½ ins. to 15 ins., with all necessary pipes, etc., are always kept ready for immediate use.

The following figures give an indication of the volume of the Board's operations.

Year ended 30th June	Vessels berthed	Nett Registered Tonnage	INWARD			OUTWARD			Gross Revenue	
			Fuel Oil	Coal	General Cargo	Fuel Oil	Coal	General Cargo	Wharves	Docks
			Tons	Tons	Tons	Tons	Tons	Tons	$	$
1914	2,685	5,795,091	—	679,198	898,598	—	650,552	566,748	3,611,105	2,056,680
1923	2,297	5,630,825	122,581	253,994	732,773	1,117	325,180	483,112	4,257,627	3,342,110
1931	3,447	10,080,436	96,437	204,126	1,031,160	105,716	215,006	849,730	4,606,902	2,780,597

Recent Legal Decisions

THE circumstances of a recent decision on the application of the doctrine of general average will have an interest for our readers. According to the York-Antwerp Rules (1924) there is a general average act when, and only when, any extraordinary sacrifice or expenditure is intentionally and reasonably made or incurred for the common safety for the purpose of preserving from peril the property involved in the common maritime adventure.

The *S.S. Seapool* was on a voyage from the Tyne to Bagnoli, Italy, and whilst anchored off Bagnoli, the "Seapool," owing to wind and weather, began to drag her anchors. The master therefore allowed her to drift as gently as possible against the pier end, and, using this as a fulcrum, swung the ship's head to sea, and eventually steamed into safety and anchored. Damage to the ship to the extent of £6,719 was sustained, and damage to the extent of £7,898 was sustained by the pier. The cargo was undamaged. The plaintiffs contended this was a general average loss, in respect of which the defendants were liable. It was found that the master of the "Seapool" had three alternatives to consider: (1) To let his ship drag ashore; (2) to attempt to turn out to sea; and (3) to let his ship drift broadside on to the end of the pier. Of these, the master considered the first to be the most dangerous, whilst if he attempted the second there was a danger that the ship would strike her stern against the pier (to which she was already very close) and damage her propeller and rudder. The third alternative prevented worse damage to ship and cargo. It was accordingly held that the act done was within that definition, being an extraordinary sacrifice made for the common safety, and the insurers were therefore liable.

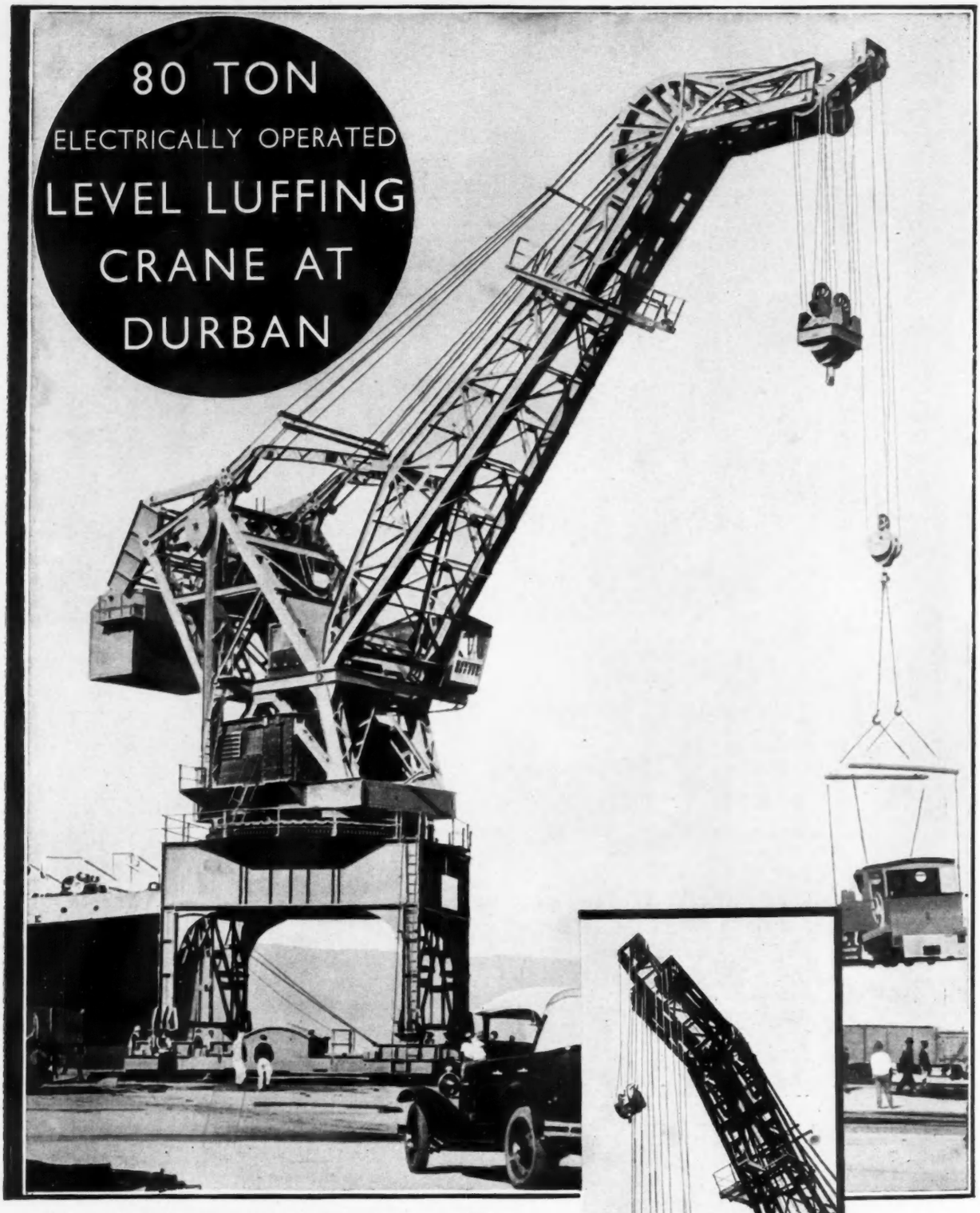
A writer in one of the legal periodicals has drawn attention to the frequent occurrence of the word "answerable" in relation to duties prescribed by railway, dock, shipping and pilotage statutes. The two well-known cases of *The River Wear Commissioners v. Adamson* (1877) and *Great Western Railway Co. v. Owners of S.S. Mostyn* (1928) turned wholly on the meaning to be given to the word "answerable" in the opening clauses of Section 74 of the Harbours Docks and Piers Clauses Act, 1847—"The owner of every vessel or float of timber shall be 'answerable' to the undertakers for any damage done by such vessel or float of timber, or by any person employed about the same, to the harbour, dock, or pier, or the quays or works connected therewith, and the master or person having the charge of such vessel or float of timber through whose wilful act or negligence any such damage is done shall also be liable to make good the same." In the *River Wear* case a sailing vessel, belonging to Messrs. Adamson, was proceeding from the Thames to the Tyne with a cargo when she encountered a violent storm near the mouth of the River Wear. The vessel was driven ashore near the entrance to the Sunderland Docks, and the master and crew were compelled to abandon the vessel. They were rescued by the rocket apparatus. The crew had not time before leaving the ship to take down the sails, with the result that she was driven against, and did damage, to one of the piers. The River Wear Commissioners brought an action against the owners of the vessel to recover the damage, their action being based on the negligence of the master and crew, and also on the terms of section 74, and particularly the word "answerable" occurring in the section. The claim on the ground of negligence was dropped, and the action was tried on the terms of section 74 alone. A judicial battle, remarkable for the varying grounds of judgment, ensued. The judge of the first instance, Mr. Justice Quain, found for the plaintiffs, being of the opinion that "answerable" involved liability in any circumstances, but by the unanimous opinion of the Court of Appeal this decision was reversed. The Court of Appeal was of opinion that, agreeable to the common law, "answerable" must be qualified to the effect that damage caused through the act of God did not involve liability. This was also the opinion of the majority of the House of Lords.

In the *Mostyn* case, while the steamship "Mostyn" was proceeding along a channel in Swansea Docks she was compelled to stop quickly through the sudden stopping of a vessel in front, and one of her anchors fouled and did damage to electric cables which were lying in the channel. No fault or negligence could be attributed to the master or crew of the "Mostyn." On the Great Western Railway Co., as owners of the docks, bringing an action against the owners of the vessel in respect of the damage, Lord Merrivale, in the Admiralty Division, regarding himself as bound by the decision of the House of Lords in *Adamson's* case, gave judgment for the defendants. This decision was affirmed by the Court of Appeal, but on appeal to the House of Lords was reversed by a majority of three noble and learned Lords to two. The majority were of opinion that, however "answerable" fell to be interpreted in the circumstances obtaining in *Adamson's* case, and they doubted the correctness of that decision, it clearly fell to be regarded as imposing liability in the present case. In *Adamson's* case the vessel was entirely without the control of the owners or their representatives at the time of damage, while in the case under judgment she was not. Even, therefore, in the absence of fault or negligence on the part of the owners the section imposed liability.

Two stevedores were employed by the owners of a ship to load a cargo from a barge on to the ship. After bringing up a number of casks from the hold of the barge and placing them on the narrow gangway alongside the hatch, they replaced the hatch covers, placed a sling on top of the covers, and put seven casks into the sling. When an eighth one was being put in, two of the hatch covers broke and the stevedores fell into the hold. By regulation 34 (b) of the Docks Regulations, 1925, hatch coverings shall not be used in the construction of deck or cargo stages or for any other purpose which may expose them to damage. In an action against the barge owners, it was held (*Hillen and Another v. I.C.I. (Alkali) Ltd., C.A.* 50 *T.L.R.* 98) that the illegality of the operation, known as it was to the stevedores, excluded any duty on the part of the barge owners other than to abstain from doing acts to injure the stevedores in doing their work.

50th ANNIVERSARY!
T.C.&D.C.L.
1884-1934
Tilbury Contracting & Dredging Co. Ltd
Tilbury House, Petty France, London, S.W.1.

80 TON ELECTRICALLY OPERATED LEVEL LUFFING CRANE AT DURBAN



LAST YEAR BABCOCK & WILCOX built and erected an 80 ton Electrically-operated, Level-Luffing Crane for the South African Railways and Harbours Administration. This Crane is now in regular commercial operation at Durban Harbour. Were Babcock & Wilcox in the habit of claiming world's records of performance there are several features of this Crane which could be so advertised. Reprint No. 1133 of a technical paper article describing this Crane in detail will be sent on application.

BABCOCK & WILCOX LIMITED
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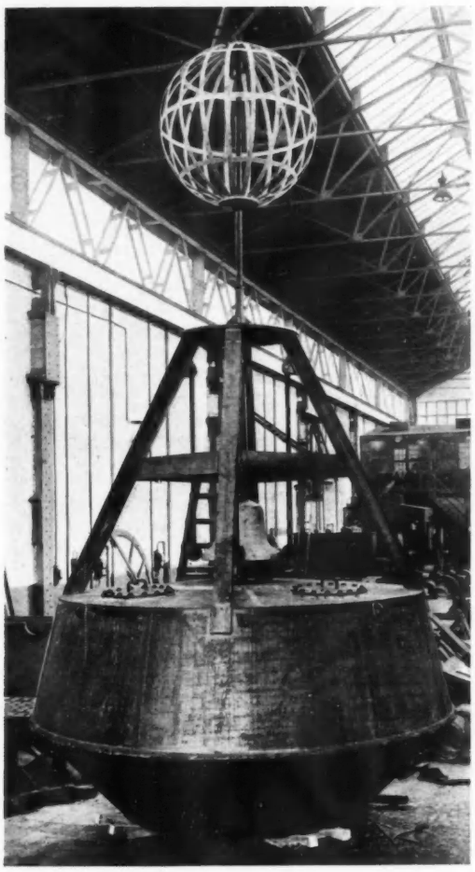
Rytad

KOUKOKUSHA NI OTEGAMI ONSASHIDASHI NO SAIWA DOZC "DOCK AND HARBOUR AUTHORITY" NITE GORAN NO MUNE ONKAKISOE NEGAIMASU.

Welded Buoys: A New Steel Development

WELDING during recent years has made considerable progress in all branches of engineering—mainly in the replacement of castings and riveted constructions—on account of the inherent advantages which it offers, together with increased efficiency as a means of jointing compared with other known methods. The confidence of engineers has been rapidly gained as the diversity of welded products has increased.

By welding rolled steel plates and sections instead of using castings savings in weight are effected due to the homogenity of the material and a consequent reduced factor of safety made possible; weldings are free from blow-holes and parts may be strengthened where maximum loads apply, while the remainder of the structure may be light.

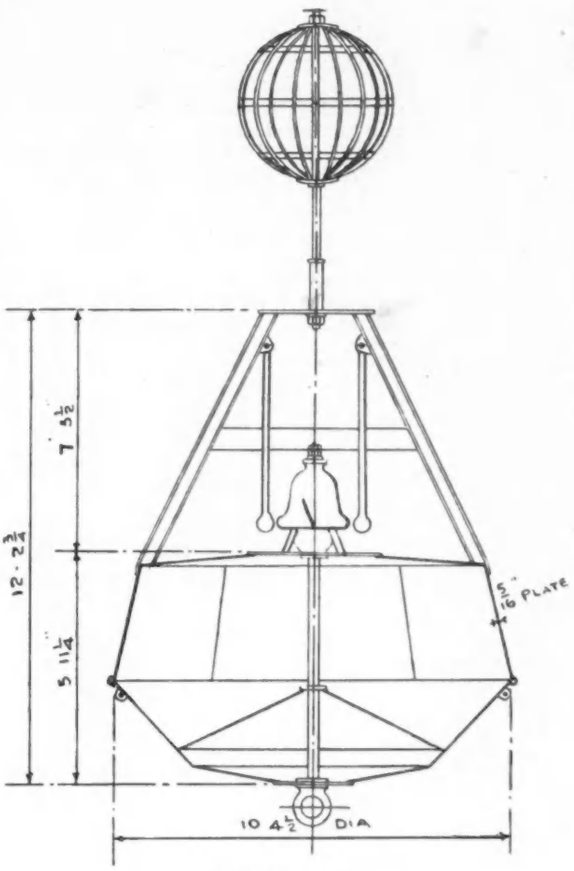


Welded Bell Buoy.

The making of water-tight joints by welding is very simple when compared with other processes, leaks may be easily rectified and the life of a welded joint must of necessity be longer than that of a caulked one. Costs of manufacture are reduced when welding is made use of, particularly does this show in respect to the elimination of forgings which are frequently a very expensive item.

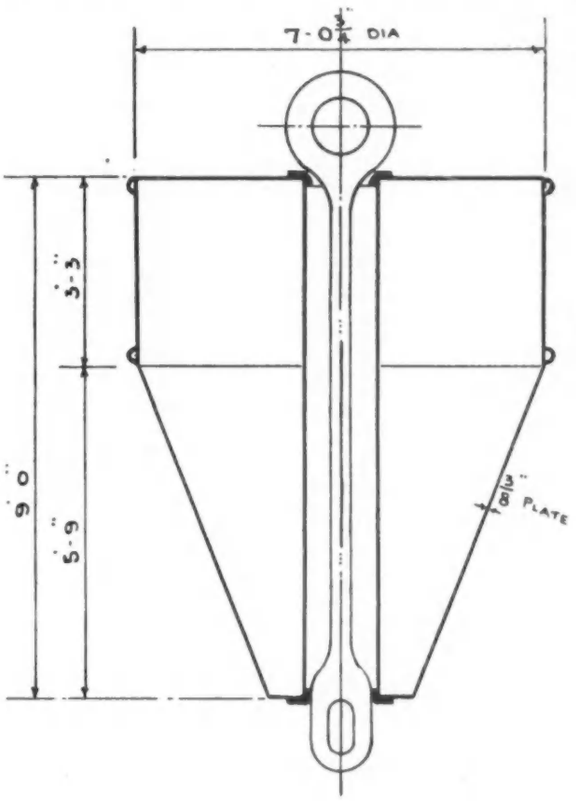
In comparison with riveted structures the saving in weight which is always effected is due to the non-requirement of lap joints, joint cover plates and flanges, in addition the reduced thickness of plates consequent upon there being no rivet holes to lower the effective section results in a definite saving. Weight reduction in welded as compared with the riveted structure is frequently as great as 20 per cent. and in most instances is at least 10 per cent.

An interesting development in welded structures is that of the manufacture of bell and other type buoys, a photograph of the former, which has been lately designed and manufactured by Messrs. Dorman, Long and Co., Ltd., to the order of the River Wear Commissioners, being shown. It will be noticed that the usual egg-shape has been replaced by a series of connected cones, four in number, the top cone is shown with man-hole lids, but the bottom cone is not visible in the photograph. This design has resulted in a profile very similar to the original type although more simple in construction. This construction would be difficult to reproduce by riveting on account of the circumferential joints which would present considerable difficulties with resultant increased cost of production.



Welded Bell Buoy.

A standard rolled steel half-round section is used to provide the ring below the water level covering the sharp angular joint of the adjacent cones. Four rolled steel joists support the clappers at the top of the super-structure instead of tubular supports usually employed, while the plate at the top of these



Welded Mooring Buoy.

Welded Buoys—continued

joists is flat. Lugs holding the clappers, plates supporting the rubber buffers, tilting and lifting lugs on the side and the support for the bell are all completely welded, the only bolts employed are:—

(1) Those shown below the ball where they are used to prevent the ball from turning, and

(2) Those for the man-hole covers.

The success of all weldings is dependent largely upon the design, and this buoy is typical of the design made without any endeavour to copy in detail the original structure; it is angular, remarkably free from projections and the surface is quite smooth.

On the top cone there are three man-holes which, while they permit of entry to the three water-tight compartments, are essential for the welding and testing of the buoy. With regard to leaks, in the case of riveted buoys it is necessary to caulk all joints before testing and there are still leaks present when this operation is complete. The exact number of leaks will always vary and the point in favour of the welded buoy is that no caulking is required and that, in spite of this, on testing, only three leaks were found, these being easily rectified by cutting out the defective portions and re-welding. Each cone is made in four parts welded together so that the number of vertical joints may be considered as four only, and the circumferential joints as three; this not only reduces the amount of welding to a minimum, but also minimises the likelihood of leakage. The thickness of the shell is 5/16-in.

The sketch shows a section through the buoy, the inside cone forming the bottom of the water-tight compartments previously referred to, and forming also a ballast chamber below, entry to which is made through the man-hole in the bottom of the buoy.

The ball at the top is completely welded and galvanized in accordance with the usual practice.

The eye-bolt for anchoring the buoy is of cast steel, this being firmly welded to the bottom cone and also to a bar running up to the top cone as shown on the accompanying drawing.

Should this buoy require to be repaired it is necessary only to cut away the defective portion and weld a patch in place with a considerable saving as compared with a riveted repair.

Another illustration shows a mooring buoy similarly constructed with welded cones and cylinders.

North-East Coast Notes

Increase in Coal Shipments on the Tyne.

THERE are no signs of anything approaching a boom on the North-East Coast, but there is a steady volume of trade, and despite the large amount of idle tonnage, there are more ships under construction on the berths in this area than a year ago.

A gratifying increase in the shipments of coal was reported at the meeting of the Tyne Improvement Commission held in March. In January and February the quantity of coal and coke dispatched from the Port was 2,420,669 tons, compared with 2,163,221 tons in the first two months of 1933, an increase of 257,448 tons, or 11.9 per cent. Bunkers shipped in the past two months totalled 295,650 tons, against 271,235 tons last year, an increase of 24,415 tons. Oil fuel bunkers also showed an increase, the quantities shipped in the first two months of the present year being 4,221 tons, as against 3,100 tons during January and February, 1933. Mr. R. S. Dalgliesh said the increase in coal shipments was most acceptable, and what was most pleasing was the fact that of the increase the greater proportion was in overseas trade.

More Anti-Breaking Appliances.

A proposal to instal two new anti-breakage appliances at Whitehill Point was confirmed by the Tyne Improvement Commission in March. The tenders approved were: Cowans Sheldon & Co. Ltd., Carlisle, of £2,610 for the erection of two electrically operated anti-breakage cranes at Nos. 5 and 5a staiths, Whitehill Point; and Messrs. F. Turnbull and Co., Newcastle-on-Tyne, of £1,140 for two power-driven Handcock anti-breakage appliances of the latest type for Nos. 5 and 5a staiths, Whitehill Point. The construction of the necessary foundations for the plant is to be carried out by the Commissioner's Engineer at a cost estimated by him at £2,250.

Referring to the proposal to instal the anti-breakage appliances, Mr. R. S. Dalgliesh said that during recent years the preparation and marketing of coal had undergone a very great change. Collieries and exporters had now to meet the demand, more especially from foreign buyers, for coal to be delivered in a condition acceptable to the buyers. Colliery companies had had to expend large sums of money in installing plant and machinery to meet that demand, and there was an insistent demand for reduced breakage in shipment. The installation of the two appliances would enable concurrent shipment into two, possibly three, holds at one time, and would save a great deal in the moving of ships. The shipowner as well as the coalowner would thus be helped.

A year ago the charges for the use of the coal and coke anti-breakage appliances at No. 5 staith, Whitehill Point, were reduced from 2d. to 1d. per ton on coal, and from 4d. to 2d. per ton on coke, for a period of twelve months. The matter has been reconsidered by the Docks and Trades Committee and it recommended that the reduced charges be continued until otherwise ordered.

Quick Work at the Staiths.

A very smart loading performance has been reported from the Pelaw Main Collieries' staiths. The steamer "Flora" arrived at 1 a.m. on Thursday, March 24th, and commenced loading at 6 a.m. She finished at 11 p.m. the same day, having taken on board 4,400 tons of cargo and 650 tons of bunkers.

A record loading was effected at the Pelaw Main coal staiths in the middle of March, when the steamer "Port Melbourne" was loaded with bunkers in 51½ hours. The amount of coal loaded was 7,200 tons, 5,000 tons of which had to be trimmed, and only 2,000 were run into the hold. This loading constitutes a record on the Tyne.

* * * *

The steamer "War Sirdar" (3,434 tons net) sailed recently from Sunderland South Docks for New Orleans with the largest cargo of creosote taken from the port—6,000 tons. The exporters were the Mon Santo Chemical Works Ltd., which have an establishment at Sunderland.

Blyth Trade on the Up-grade.

Although Blyth had a fine record last year, there is faith that even those figures may be improved upon during the current twelve months, if existing agreements between this country and Scandinavia continue undisturbed. Coal shipment returns from Blyth for the first quarter of this year show a considerable increase compared with the corresponding period of last year. During the three months 1,637,246 tons of coal were shipped against 1,416,147 tons over the same period of 1933, during which year all previous shipping records were broken.

Further Reduction in Tolls and Dues by Hartlepool Port and Harbour Commissioners.

Hartlepool Port and Harbour Commissioners have made a further reduction—of five per cent.—in their tolls and dues on cargoes and vessels coming in for bunkers only and repairs. A rebate of 10 per cent. was granted in 1928, and this was increased to 15 per cent. in January, 1933. With the additional 5 per cent. just made, the total rebate on the Commissioners' tolls and dues will be 20 per cent. below the statutory rate.

Iron Trade Improvement.

A marked improvement in the shipments of iron and steel from the Tees during March was recorded, the total clearance amounting to 45,711 tons, compared with 33,116 tons in February, being higher than for any month in the last two and a half years. The principal foreign shipments were:—Union of South Africa, 3,438 tons; Russia, 3,060 tons; India, 2,567 tons; the Straits Settlements, 1,260 tons; and the Argentine, 1,226 tons.

During the past month three additional blast-furnaces were re-kindled on Tees-side, and there are now 29 blowing on the North East Coast. Confidence in the steady development of trade is indicated by the increasing importation of foreign ore, and last month 134,539 tons were discharged against 80,937 tons in February.

Five Portable Electric Grabbing Cranes for Paper Mills at Ellesmere Port.

An order has been placed with Stothert and Pitt, Ltd., Bath, by Messrs. Bowater's Mersey Paper Mills, Ltd., Ellesmere Port, Cheshire, for the supply and erection of five portable electric crank level luffing grabbing cranes, each capable of lifting 2½ tons at a radius of 56 ft. These cranes are being installed for the purpose of handling coal and china clay, cargo hooks being provided for dealing with bales of pulp, reels of paper and general cargo.

Bombay Port Trust

Memorandum by the Chairman (W. R. S. Sharpe, Esq.), on the Revised Estimates, 1933-34, and the Budget Estimates for 1934-35

ALTHOUGH the world depression subsided to an appreciable extent during 1933, any hopes that may have been entertained of an early trade revival were dispelled last July when the breakdown of the World Economic Conference revealed the wide divergence between national and international conceptions of the measures necessary to restore stability and confidence. But it can at least be claimed for the Conference that it cleared the air and forced the nations of the world to a fuller understanding of each other's difficulties and a general realization that no permanent solution of the world's economic problems can be reached without intelligent and sympathetic co-operation. The phase of readjustment to the vastly changed conditions of modern trade must necessarily be gradual; no great improvement in world conditions can be hoped for until stability of monetary exchanges on an accepted international basis is in some measure restored. Pending a settlement of the more urgent national problems, the existing obstacles to the free interchange of trade—tariffs, quotas, subsidies, State control—must continue to operate, though reciprocal agreements between national groups may temporarily ease the situation. Moreover, the restoration of international trade equilibrium, when it comes, will almost certainly introduce an era of intensive price competition in which all but the best-equipped countries will lose ground. It therefore behoves India, as one of the greatest agricultural units in the world, and one of immense potential development, to look ahead and take steps to ensure that, when the time comes, her economic organization is adequate to meet the strain imposed by new conditions.

Apart from the universal shrinkage of trade resulting from the world depression, the most disturbing problems confronting Bombay continues to be the increasing diversion of traffic to the ports of Kathiawar, and in particular to the specially favoured port of Bhavnagar. To such extent as this diversion is due to geographical causes and normal competition, Bombay has no legitimate grounds for complaint, but it has every right to protest when its natural trade is diverted by factors outside the range of fair competition to subsidised ports, the cost of whose development and port services is financed, not out of port earnings as in the case of all British Indian ports, but mainly out of British Indian Customs revenues. Under such conditions every addition to the Customs Tariff naturally encourages further diversion of imports and facilitates port developments which would otherwise be uneconomic. The logical sequence of this forced development is diversion of export as well as import traffic and the problem has now reached a stage when Bombay's position as a central market and entrepôt of trade is being seriously undermined. India has plenty of room for more seaports and, in course of time, her agricultural expansion will necessitate the opening up of new ports. But unless all ports are administered on a common basis as regards the incidence of capital and maintenance charges and allocation of Customs revenue, the inevitable result must be greater diversion of trade into unnatural and uneconomic channels to the prejudice of national interests.

Another severe handicap on Bombay's trade is the Town Duty of one rupee per bale on all raw cotton entering the City, whether for local consumption or foreign export. This ill-conceived tax has been the subject of repeated but unavailing protests from the port and shipping interests during the past decade. It has in the past been argued on behalf of Government and the Municipality, who share the proceeds of the tax, that the imposition is too small to have any appreciable effect on the volume of raw cotton passed through Bombay. In present trading conditions, however, when profits are cut to the finest margin, shippers are forced to consider every anna in competitive charges, and there is now ample proof that the Town Duty is materially helping to restrict Bombay's direct export trade in cotton—by far the most important of her export commodities. At a time when special efforts are being made to increase the demand for Indian cotton in foreign markets, this restriction is most unfortunate for Bombay and, unless speedily checked, it must seriously and permanently affect the revenues of the port, the railways serving Bombay, and the prosperity of the City as a whole. The cumulative effect of these factors on the trade of the port is exceedingly difficult to forecast in budgetting for the coming financial year and it is quite possible that, if they continue to operate, the budget estimates now submitted may have to undergo substantial revision at a later stage of the year.

Revised Estimates, 1933-34.

The revenue budget for the current financial year was based on the expectation of a small improvement of some 2 per cent. in receipts from direct trade sources, as compared with the corresponding actuals for 1932-33. On this basis the revenue under General Account was estimated at Rs.245.06 lakhs. The revised estimated receipts total Rs.244.12 lakhs, and in most departments the revised figures approximate fairly closely to the original budget. In the Docks a small improvement of Rs.1.56 lakhs is expected, but this is counterbalanced by an anticipated reduction of nearly the same amount at the Bunders, chiefly due to a slight decrease in imports of petrol and kerosene. The revised receipts under Railway and Port Departments show little variation from the original figures. In the Land Department there is an apparent falling off of nearly Rs.3 lakhs, but this is mostly accounted for by the rebates in ground and godown rents sanctioned by the Trustees with effect from 1st October, 1933, as a measure of relief to their tenants. The financial effect of these rebates was estimated at about Rs.4½ lakhs a year. The storage occupations at the Cotton Depot have also been somewhat below expectation. The revised estimates under Interest and Miscellaneous—always a variable item— are nearly Rs.1½ lakhs above the original estimate, owing to the cash balances available for investment being larger than anticipated during the early months of the financial year and the interest earned being correspondingly more.

On the Expenditure side all grants have been restricted to a minimum and savings have been effected wherever possible. The revised estimated expenditure under General Account, Rs.243.84 lakhs, shows a reduction of nearly two lakhs on the original budget. The revised estimate of the working result under General Account is a small surplus of about Rs.28,000 against the originally budgetted deficit of Rs.75,000.

Budget Estimates, 1934-35.

In framing the revenue budget for the financial year 1934-35, the Finance Committee had before them the actuals for the twelve months ending 30th September, 1933, the average receipts of the past five years and the opinions of leading exporters and importers as to trade prospects during the next twelve months. The monsoon of 1933 was generally favourable and the crop reports good. On the whole, local trade interests incline to the view that, although no substantial recovery of trade can be looked for in the near future, the depths of the depression have been sounded and the prospects are distinctly more hopeful than a year ago. Some revival in imports of machinery for industrial development is indicated, but the volume of other classes of imports such as sugar, piecegoods and metals is likely to show a further decline resulting from the growth of indigenous supplies, the operation of quotas and restrictive tariffs and increase in direct shipments to the Kathiawar ports. Resulting from the settlement concluded with Japan, there is a definite expectation of increased exports of cotton and a small increase is also anticipated in shipments of grain and seeds.

After careful consideration of all the factors involved, the Committee have budgetted for a small increase of about 2 per cent. in receipts from trade, on which assumption the total revenue under General Account for 1934-35 is estimated at Rs.248.82 lakhs, as against the revised figure of Rs.244.12 lakhs for 1933-34.

On the Expenditure side credit has been taken for a lump-sum saving of Rs.1½ lakhs from retention of the emergency cut in salaries. The Committee have closely scrutinised all controllable items and have reduced the grants to a minimum. Owing to the drastic cuts in maintenance expenditure for several years past, it has now become essential to take in hand certain repairs and renewals, chiefly of the nature of repainting, which have been postponed from year to year. The total estimated expenditure for 1934-35 under General Account is Rs.248.37 lakhs, an increase of Rs.4.53 lakhs over the revised expenditure estimated for the current financial year. This includes a provision of Rs.3 lakhs from revenue for expenditure on special repairs and renewals. The normal procedure is to provide an annual grant from revenue for expenditure under this head, but owing to the financial stringency no such provision has been made since 1929-30 and for the past four years the whole of the expenditure on special repairs

Bombay Port Trust—continued

and renewals has been met from surplus balances in the Emergency Fund. As the latter fund has thereby been reduced to Rs.7½ lakhs, a balance which, in the opinion of the Committee, should not be further depleted, it is necessary to revert to the usual procedure of providing a grant from revenue.

The other main increases which call for explanation are Rs.94,000 to meet the addition of one per cent. in Municipal General Tax, Rs. 57,500 for Municipal General Tax on monthly tenancy structures (to be recovered subsequently from the tenants), Rs.78,000 for additional dredging necessary at the Docks and Bunders, Rs.43,300 for repairs, maintenance and renewals of gear, and slightly over Rs.1 lakh increase in establishment charges, including grade increments and provision for additional labour and temporary staff at the Docks and Railway to cope with the anticipated increase of traffic. The increase of Rs.34,000 under Provident Fund (including interest) is normal and the additional Rs.15,000 under gratuities is due to payments to retrenched staff who will be finally retiring during the year. As against these increases there is a decrease of Rs.2.71 lakhs under Debt Charges, owing to repayment of certain loans on maturity and resulting saving in interest and sinking fund. The forecasted result of the year's working under General Account is a small surplus of Rs.45,009.

Under Pilotage Account the revised estimates for 1933-34 anticipate a surplus of Rs.68,043 and for 1934-35 a surplus of Rs.24,103, to be transferred to the Vessels' Replacement Fund.

Capital.

In the original estimates for the current year 1933-34, provision was made for an expenditure of Rs.4.94 lakhs. The revised capital estimates aggregate Rs.2.25 lakhs, the decrease being principally due to the proposed purchase of a new drag suction hopper dredger being deferred until sufficient experience has been gained of the efficacy of suction dredging at this port by adapting one of the existing hopper barges for experimental work.

The policy of restricting capital expenditure to works which are either essential or designed to effect a saving in working cost, has been strictly adhered to in budgetting for capital requirements during 1934-35, the estimates for which aggregate only Rs.2.30 lakhs, i.e.,

		Lakhs. Rs.
Section I.	New Works, Ordinary	1.50
,, II.	Alexandra and Hughes Docks ...	.27
,, III.	Port Trust Railway and Depots	.53
		Rs. 2.30

Under Section I., the principal item is Rs.80,000 for cost of two new coal barges urgently required by the Chief Engineer's Department in replacement of old barges which have been disposed of.

The estimated loan balance on hand on 1st April, 1934, is Rs.2.65 lakhs, against the budgetted expenditure of Rs.2.30 lakhs for 1934-35. It will therefore be unnecessary to raise any fresh loan during the next financial year. No new loan has been raised since 1924-25; the interval of ten years since the last flotation constitutes a record in the history of the Trust.

Lloyd's Register Shipbuilding Returns for the Quarter ended 31st March, 1934

THE statistics issued by Lloyd's Register of Shipping regarding merchant vessels under construction at the end of March last show that in Great Britain and Ireland there is an increase of 149,899 tons in the work in hand as compared with the low figures for the previous quarter, and that the present total—481,440 tons—is 229,039 tons greater than the tonnage which was being built at the end of March, 1933.

At the end of March the tonnage on which work was suspended amounted to 144,972 tons—about 139,000 tons of steamers and 6,000 tons of motor ships. (These figures included a 73,000-ton steamer on which work has since been resumed). The amount of tonnage on the stocks shows a pronounced acceleration of the upward tendency which has been observable in the quarterly totals since the beginning of 1933.

About 99,000 tons—21 per cent. of the tonnage now being built in this country—are intended for registration abroad or for sale.

The tonnage now under construction Abroad*—597,731 tons—is about 172,000 tons more than the work which was in hand at the end of December, 1933, and is the highest quarterly total recorded since September, 1932. In constitutes, moreover, the first increase of any consequence to be noted in the tonnage under construction abroad since June, 1930. Tonnage, included in the total in hand abroad, on which work has been suspended amounts only to 1,235 tons of steamers and 6,853 tons of motor ships.

The five leading countries abroad are: Japan, 122,590 tons; France, 103,188 tons; Germany, 82,650 tons; Holland, 51,315 tons; and Denmark, 51,140 tons.

The total tonnage under construction in the World* amounts to 1,079,171 tons, of which 44.6 per cent. is being built in Great Britain and Ireland, and 55.4 per cent abroad. The World total shows an increase of 322,000 tons over the figures at the end of December last, and is the highest recorded since June, 1932.

In Great Britain and Ireland, 203,012 tons were commenced during the last three months, showing an increase of 128,311 tons over the corresponding total for the December quarter. During the quarter ended March, 1934, 34,839 tons were launched in Great Britain and Ireland, a decrease of 30,435 tons as compared with the December quarter. Similar figures for abroad are 258,048 tons commenced, and 51,263 tons launched, showing an increase, as compared with the previous quarter, of 188,088 tons in the tonnage commenced, and a decrease of 58,401 tons in the tonnage launched.

Oil tankers under construction in the world amount to 37 vessels of 248,578 tons, of which 12 vessels of 82,526 tons are being built in Great Britain and Ireland, 4 vessels of 32,100 tons in Sweden, 3 of 24,900 tons in Germany, 3 of 23,570 tons in Holland, 2 of 19,200 tons in Japan, and 5 of 18,212 tons in Spain.

Of the 481,440 tons under construction in Great Britain and Ireland at the end of March, 175,687 tons consisted of motor ships, while at the same date the motor ship tonnage being constructed abroad (412,902 tons) was 230,588 tons in excess of that of the steamers.

The vessels being built in the world at the end of March include 3 steamers and 20 motor ships of between 8,000 and 10,000 tons each; 2 steamers and 12 motor ships of between 10,000 and 20,000 tons; and 4 steamers (including 2 of 73,000 tons and 68,000 tons respectively) and no motor ships of 20,000 tons and upwards.

The table respecting marine engines shows that the horse power of steam engines now being built or being fitted on board amounts to about 627,000 h.p.; this figure includes 51 sets of turbine engines of about 514,000 shaft horse power. The horse power of the steam reciprocating engines (about 113,000 h.p.) amounts to 8.7 per cent. of the total horse power of marine engines now being built in the world. The figures for oil engines aggregate approximately 668,000 h.p.

Tonnage to Lloyd's Register Class.—Of the merchant shipbuilding in hand throughout the world the tonnage being built under the inspection of Lloyd's Register at the end of March amounts, to 807,820 tons. Of this total 464,435 tons, representing more than 96 per cent. of the tonnage being built there, are under construction in Great Britain and Ireland; while, of the tonnage being built abroad, 343,385 tons, or over 57 per cent. of the total, are being constructed under the inspection of Lloyd's Register.

*Excluding Russia, for which no figures are available.

Weser Inland Shipping in February, 1934.

Full loading was possible for a short time in January. With this exception, barges could only travel with limited cargoes from the canal to the Weser.

Goods traffic through the Bremen Weser Lock in February amounted to 130,400 tons (downstream 102,400 tons, upstream 28,000 tons). As comparison with January, 1934, and February, 1933, is not possible, due to blockage from ice during those periods, however, compared with the monthly average of 1933 there was an increase of 14 per cent. confined to downstream traffic. Upstream traffic was below the average. Among downstream goods, coal decreased; gravel and sand, potash salts and grain, on the other hand, increased. With upstream traffic only piece goods exceeded the yearly average. Grain, flour, timber and coal were all slightly lower.

During the two months January and February, 1934, through traffic in both directions together amounted to 252,400 tons. This is the highest figure since 1930. The two previous years were both exceeded by almost 100,000 tons, or more than 60 per cent. Compared with the previous year downstream traffic increased with 183,100 tons by 73,800 tons, or 68 per cent., as transport of gravel and stones, coal and potash salts were larger. The quantity of grain destined for Bremen and Brake increased considerably. Upstream 69,300 tons were loaded, or 23,200 tons, equal to 50 per cent. more. There was an increase in piece goods, grain, coal, flour and phosphate, also pyrites and rice.

Hull and the East Coast

Imported Merchandise Handled at the Hull Docks during the First Quarter of the Year.

NOT far short of a million tons of imported merchandise was handled at the Hull Docks in the first quarter of the year. This included wheat and kindred cereals 340,000 tons, oil seeds, nuts, kernels and oil cakes 190,000 tons, timber 130,000 tons, petroleum 100,000 tons, sheeps' wool and hides 22,500 tons, provisions 24,000 tons, and varying quantities of other goods, as well as manufactures. In the aggregate the volume of traffic was about the same as in the corresponding three months of last year. Petroleum, which is imported at the extensive oil depôt at Saltend, however, showed a decline of approximately ten million gallons. The export trade remained without notable improvement, the shipments of coal barely reaching the low level of a year ago. The exports of coal (foreign) from the Humber ports (Hull, Grimsby, Immingham and Goole) in the quarter amounted to 795,467 tons, comparing with 802,538 tons, and from Boston and Lynn 57,392 tons, against 84,742 tons. An improvement is expected in the current quarter from new arrangements made with regard to quota of production and minimum prices. The trade in bunker coal is fairly satisfactory.

Frolich Hydraulic Friction Brakes to be installed at Hull.

With a view to greatly facilitating the handling of the inward goods traffic for Hull and the Hull Docks, the London and North Eastern Railway Company are to instal at the inward yards at Hessle, etc., the Frolich hydraulic friction brake, as a result of a visit recently to Trappes, on the French State railways near Versailles, by engineering and operating officials of the Company. Four of these brakes are to be installed at Hull. It is in the process of gravity sorting that the retarder brakes, as they are called, are employed. The retarder consists of a beam at the side of each rail which presses upon the wheel tyres of each vehicle as it passes and decelerates its speed to the required rate. The pressure is operated by hydraulic power and is controlled from the brakesman's tower on the hump under which is placed the hydraulic machinery. At present the speed reduction is effected by men known as "wagon chasers," who run after the vehicles and apply the hand brakes at the side, but this will be entirely obviated by the new system. Moreover, the manual route lever switches at the entrance to each group of sidings will be replaced by switches electrically controlled by the man in the brake tower, all the points being set by one movement of a lever in the tower. A further improvement in operating will be that instructions will be conveyed to the drivers of the shunting engines by radio-telephony instead of the present method. The installation of the Frolich retarder brakes and the electrical route levers, which involves a very heavy expenditure, is expected to lead to a considerable increase in the speed of working. The maximum rate under the new system will be the sorting of 150 wagons per hour, or 3,600 wagons in 24 hours, an enormous augmentation of capacity.

Trial of the Handcock Anti-Coal-Breaker at Alexandra Dock Extension.

A large company of about 200 guests witnessed a trial of the Handcock Anti-Coalbreaker which has been installed at No. 7 hoist at the Alexandra Dock extension. Those present included the Lord Mayor of Hull, the Sheriff of Hull and numerous others prominent in the coal and shipping trades. The vessel selected for the experiment was s.s. "Thistlebrae" of Sunderland, which had arrived to take in 6,400 tons of coal for Buenos Aires. There was general approval of the work done by the apparatus, and various suggestions were made to further reduce breakage between the coal leaving the wagon and reaching the chute. At the luncheon which followed, Mr. P. Gibb, goods manager of the Northern area of the London and North Eastern Railway, presided. He remarked that his company were perfectly aware that the coal trade regarded the installation of an anti-coalbreaker as a necessary equipment of modern coal shipping docks. But, he added, they needed some encouragement before they moved and did not want to waste a tremendous lot of money in putting in an installation which was not going to prove of benefit to the trade. The shipper should not be deterred from using it merely because there was a small charge. He had wondered at first whether they might not be able to admit the use of the appliance without any additional charge, but really there were so few services which they rendered at Hull Docks for which they received payment that they must have some source of revenue. (Laughter.)

Mr. A. W. Archer, chairman of the Midland Districts Anti-Coal Breakage Committee, replying, said that the installation of an up-to-date anti-breakage appliance would give the greatest satisfaction to foreign buyers, and he hoped that they would testify to it by substantially increased orders from the Humber. The railway company would rightly expect the device to be used if it fulfilled the purpose for which it was designed. He had been informed by the exporters that there need be no misgiving about that. Mr. Archer also observed that if the London and North Eastern Railway, like the Great Western Railway and the Aire and Calder Navigation, were to regard the use of an anti-coalbreaker as included in the existing shipping charges, as he suggested they should, it would gratify their friends at home and abroad. Mr. W. Minnitt Good, president of the Hull Chamber of Commerce and Shipping, referring to the future of the trade, remarked that they might take it that the L.N.E.R. were in the inner ring of knowledge and that the steps which they were taking were based on the fact that before long there would be more coal shipped from the port.

Progress of Work on Training Walls at Trent Falls.

Work on the training walls at Trent Falls at the confluence of the Trent and the Ouse is proceeding satisfactorily. At the last meeting of the Humber Conservancy Commissioners, the Engineer (Mr. A. E. Butterfield) reported that the piling had been nearly completed. Since the date of the previous report the gap had been shortened 225 feet, and the foundations of the embankment had been carried successfully across the whole of the gap. The deep hole which existed had shoaled considerably and the depth below low water to the top of the foundation was now only 18 feet and the maximum depth of the river bed was only 25 feet. Trent Ness had eroded so as to conform to the curve of the wall, and the protuberance which had existed opposite the gap had disappeared. The work is being carried out by the Aire and Calder Navigation, whose bill for an extension of time and increased borrowing powers had now passed through Parliament and has received the Royal Assent. Towards the extra cost due to unforeseen difficulties the Humber Conservancy is contributing a lump sum of £40,000.

Immingham Dock Statistics.

During the month of March, 1934, a total of 108 vessels, representing a net registered tonnage of 120,791, used Immingham Dock, including 13 vessels totalling 22,267 net registered tons using the Western Jetty coaling berth; as compared with March, 1933, when 89 vessels totalling 99,182 net registered tons used the port, including 18 vessels of 20,592 net registered tons using the Western Jetty.

Canal Construction: Oldenburg-Wilhelmshaven

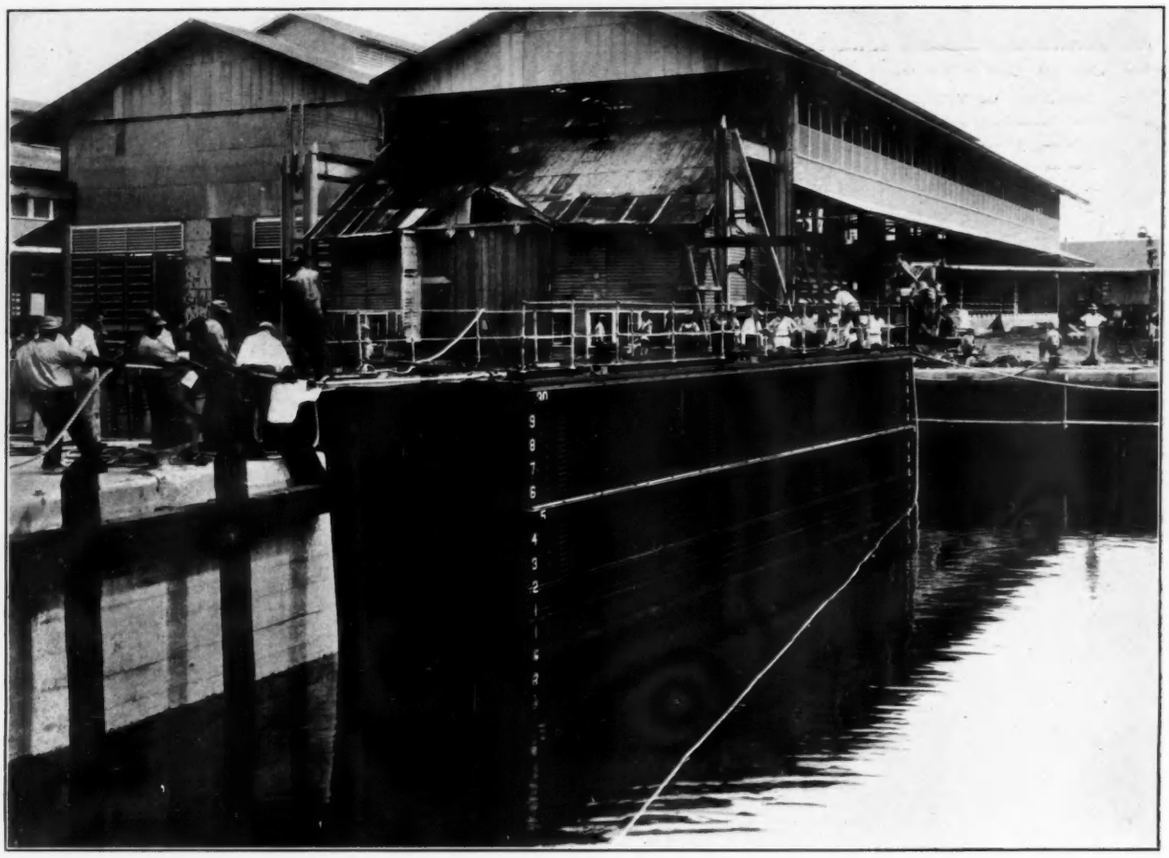
According to a statement issued by the Canal Association of the Jade Towns, the Jade Hunte-Connecting Canal requires only two locks in the neighbourhood of Oldenburg and in Mariensiel, compared with the seven required by the Ems-Jade-Canal. Only 23 bridges are necessary, compared with 40 for the Ems-Jade-Canal.

The proposed Jade-Hunte-Canal will commence in a north-eastern direction, east of Oldenburg via Ohmstede and the Ipsweger Moor. It would then run in a north-western direction, parallel to the railway line Rastede, Hahn, Varel, hard on the edge of the Geeste, through moor and marsh-land. The projected route is through the low-lying country of the Ellenserdamm parallel and close to the dyke running to Wilhelmshaven. The total length of the canal, according to plans, would be 48.9 kilometres. The proposal is to construct this waterway wide and deep enough to take 1,000-ton barges. A traffic of three million tons is calculated yearly. This figure would be sufficient to raise not only the running and maintenance costs, but also to amortise the capital and pay interest on it.

It is claimed that, not only as a traffic way, but also in view of land cultivation, the canal offers large possibilities for Oldenburg. As a result, the Ipsweger Moor could be cultivated and 300 settlements created.

The total expenses are calculated at 19,800,000 Rm., i.e., 404,000 Rm. per kilometre, and it is stated that 2,500 workers have work for four years.

The Panama Canal

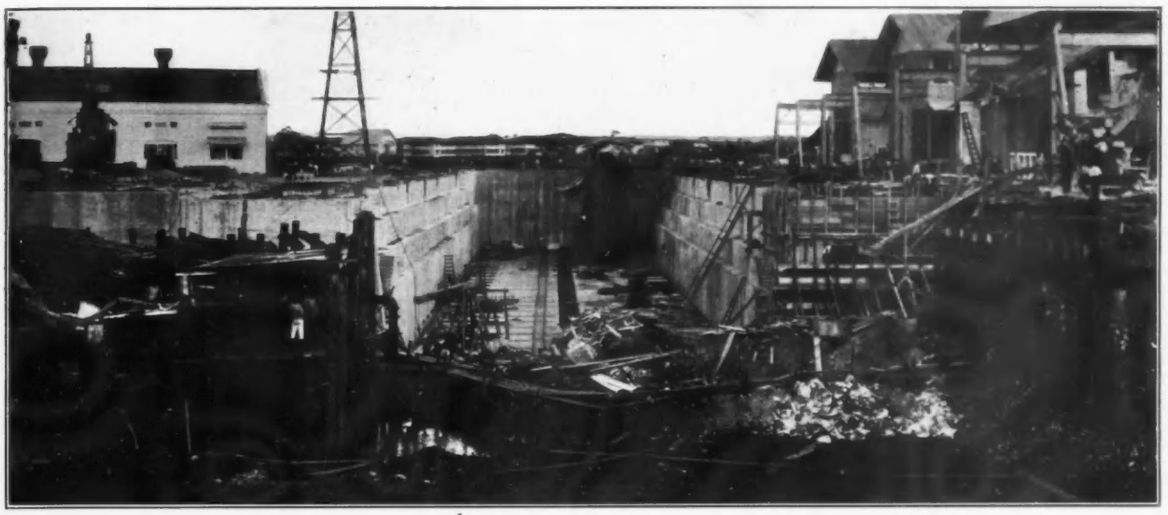


The Panama Canal, Cristobal Dry Dock Construction. View showing Caisson being pulled to position for testing. September 29, 1933.

The Panama Canal, Cristobal Dry Dock Construction. View, looking South-West, from North Wall, showing Pump Discharge during filling to test Floating Caisson. September 29, 1933.

The Panama Canal

New Dry Dock opened at Cristobal



The Panama Canal, Cristobal Dry Dock Construction. General View of Dry Dock, looking East. June 20, 1933.

THE reconstruction of the dry dock at Cristobal Shops, at the Atlantic terminus of the Panama Canal, which was begun in December, 1932, has now been completed, and the dry dock in its enlarged and improved state was re-opened on December 13th, 1933.

The first dry dock at Cristobal was built in 1886 by the first French company engaged in the construction of the Panama Canal, and had a usable length of 190 ft. and a width of 32 ft. The Isthmian Canal Commission enlarged this dock in 1907 and 1908 to a usable length of 300 ft., with a width of 50 ft., the depth remaining the same. The depth over sill and keel blocks was 13½ ft. at mean tide. The dry dock as so enlarged was used until the end of 1932 for the docking of dredging equipment, tow-boats, submarines, etc., in the Government service and for commercial vessels which might be accommodated in it. After the opening of the Canal larger vessels were taken through the Canal to the 1,000-ft. dry dock at Balboa Shops, and under an Executive Order dated November 17th, 1921, it was provided that vessels transiting the Canal from Cristobal to Balboa and return, for the sole purpose of having repairs made at the Balboa dry dock and shops would be exempt from the payment of tolls.

The new enlargement increases the usable length by 81 ft. and the depth by 7½ ft., and the width at top is increased by 30 ft. Concisely, the new dry dock has a length of 381 ft. from the head to the inside of sill along the centre line; a width of entrance at top of 66 ft.; a width of dock at top of 80 ft., and at bottom of 65 ft., with three altars on each side, each 2 ft. 6 ins. wide; elevation at top of dock, 7 ft. above sea level; elevation of bottom of dock, 25 ft. below sea level, of sill 22 ft., and of keel blocks 21 ft. below mean sea level. Allowing 15 ft. off the dock length for working around a ship and 2 ft. off the entrance width, the new dock will take vessels 366 ft. long or more, up to 64 ft. beam and drawing nearly 21 ft. of water. The head of the dock is a circular segment, having a radius of 40 ft.

The work of reconstruction and enlargement began on December 12th, 1932, with the beginning of a cofferdam across the entrance slip, at a distance of about 280 ft. from the gates of the old dry dock. Sheet steel piling was driven by a crane barge using a steel pile hammer. Earth fill was placed by using 4-cubic yard dump trucks, dumping from either side of the entrance slip and advancing toward the centre as filling advanced. A gasoline-driven shovel of ¾-cubic yard dipper was installed in a borrow pit, about a mile from the dock site, and 32,200 cubic yards of earth were placed in the dam between December 15th, 1932, and February 23rd, 1933, using on an average eight trucks on two shifts of eight hours each.

Pending completion of the cofferdam, excavation was carried on behind the old mitre gates. A shaft was sunk directly behind the gates, and tunnel excavation was started for the suction culvert. Neat excavation was 10 ft. by 7 ft. 2 ins.

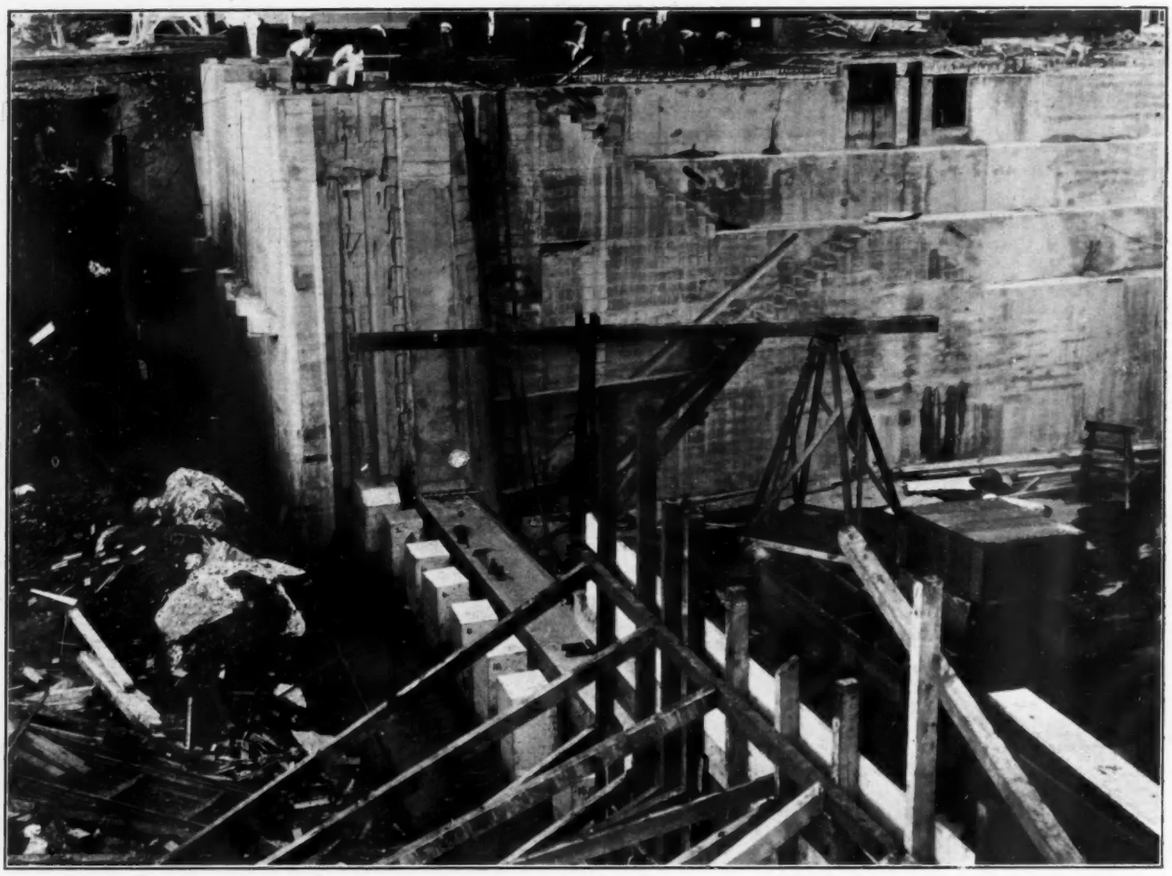
Excavation in the suction tunnel was completed in February. To facilitate the placing of concrete, 8-in. cased holes were drilled from the ground surface along the centre-line, on 10-ft. centres, and all concrete for the culvert was poured through these holes. Concreting of this culvert was completed in April, a total of 330 cubic yards having been placed.

The natural rock surface along the north wall was such that, by making a slight additional excavation, a ramp on about a 4 per cent. grade was secured leading from the head of the dock to the floor of the old dock, just behind the gates. The spoil was hauled out in dump trucks of 4 cubic yards capacity and dumped in needed fills around buildings of the Mechanical Division and the Supply Department in the vicinity. Excavation for the dock floor, dock walls, north retaining wall and track supports on the north side totalled 38,600 cubic yards of earth and rock.

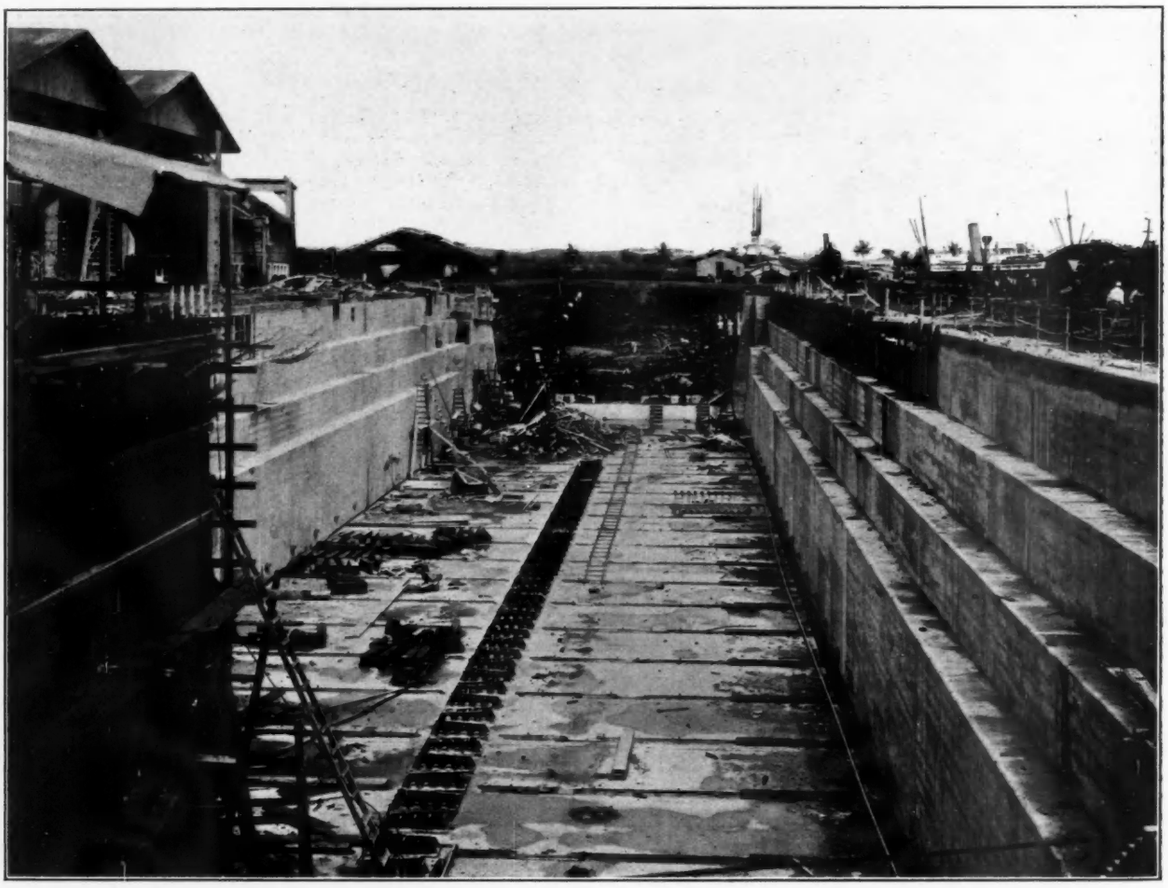
Atlantic Terminal, Cristobal Dry Dock. View showing old dry dock, June, 1918.

Cristobal Dry Dock. Another view of old dry dock, January, 1922.

The Panama Canal



The Panama Canal, Cristobal Dry Dock Construction. Setting Granite, Dry Dock Sill. June 20, 1933.



The Panama Canal, Cristobal Dry Dock Construction. View, looking West, from Head of Dry Dock. July 26, 1933.

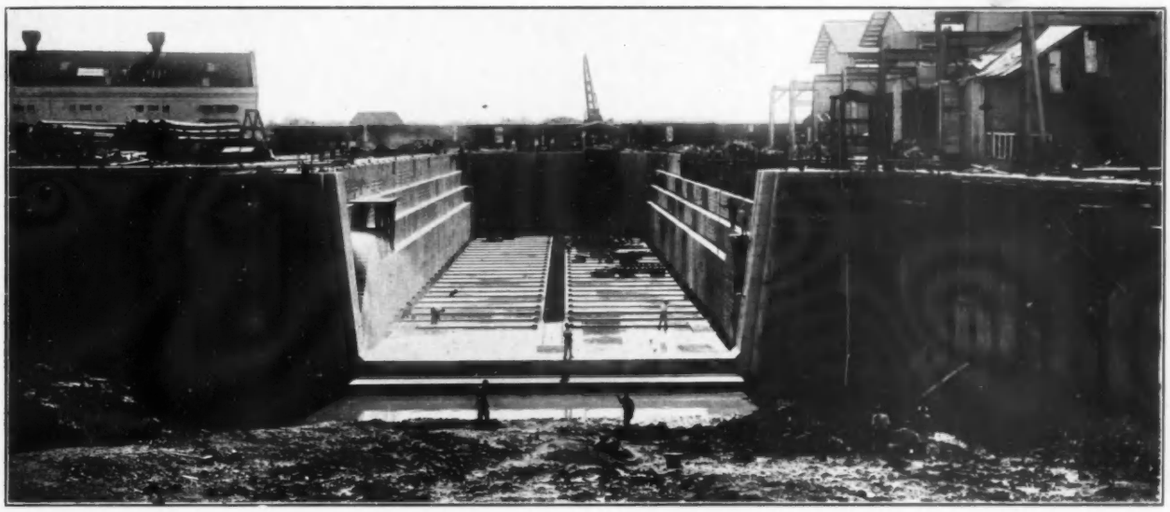
The Panama Canal—continued

For the concrete mixing a weighing batcher, purchased originally for use on the Madden Road, was set up at the stock pile, and dry batches were hauled in 1½-ton trucks to a 21-cubic foot paving mixer set up at the dock. The placing of concrete began on February 16th.

The gate for the dry dock is of the floating caisson type, bearing against a granite block sill.

A retaining wall, 89 ft. 6 ins. long, on the north side at right angles to the centre-line and one 82 ft. long on the south side, making an angle of 9°43'39" with the centre-line, are provided against which the caisson may be moored when not in use.

A flooding culvert 8 ft. by 4 ft. 6 ins. in the south wall divides into two openings, each 4 ft. by 4 ft. 6 ins., at the face of the dock. A suction culvert 8 ft. by 4 ft. 6 ins. leads from the south side of the dock approximately 161 ft. to the pump house. The suction and flooding culverts join at a point 55 ft. from the inside of the sill and open into two sumps in the floor, one on each side of the dock. A discharge culvert 6 ft. square leads from the pump house through the end of the south retaining wall. Keel blocks on 4 ft. centres and sliding bilge blocks on 12 ft. centres which may be hauled back to the wall by chain from the coping above are provided. A 5 ft. gauge track for a locomotive crane on the north side and a 5 ft. and 16 ft. gauge track for a heavy crane on the south side were provided. Upon the completion of the dry dock construction and installation of pumps the cofferdam across the entrance slip was removed and the approach cleared by the Dredging Division.



The Panama Canal, Cristobal Dry Dock Construction. View, looking East, from Cofferdam, showing start of filling to test Floating Caisson. September 28, 1933.

The rebuilding of the dry dock at Cristobal, as described above, was one feature of a programme of reconstructing and modernising the repair shops and dry dock at the Atlantic terminal of the Panama Canal, which was begun in 1927 and has now advanced to about 95 per cent. of completion. Of all the proposed new buildings, only the foundry remains to be constructed. The Mechanical Division has now, at Cristobal, both a modern dry dock and a modern repair plant in full working order, which facilities are offered and are available always to commercial shipping and naval vessels as well as to the Canal itself.

The new buildings are of steel and concrete of modern design, equipped with travelling cranes and abundantly supplied with railroad and locomotive crane trackage and other weight-handling facilities. They replaced the former wooden buildings built by the French Canal Company when the dry dock was first built in 1886. While nominally French buildings, they had been repaired so often and so extensively that little of the original material remained. At the same time that new fireproof shops were provided, the Supply Department built new fireproof storehouses for engineering materials adjacent to the shops. The reconstruction of the shops began in March, 1928, and has continued since without interruption, the buildings being placed one at a time and the shops being kept in operation without interference in any department, except the dry dock.

The ground plan of the new plant is radically different from the old. The arrangement of the buildings has been patterned after that of the Balboa Shops. The boiler shop, pipe, sheet metal and forge shop, and the machine shop are placed at right angles to the dry dock, and have crane runway extensions out of the ends of the buildings, from which heavy material can be placed on railroad cars or can be reached by the dry dock crane and placed on board ships in the dry dock. The compressor and pump building was placed near the head of the dry dock, in order to make the underground culverts for unwatering the dock as short as possible. The main electrical switch-boards are also located in this building, from which current is distributed to all of the other buildings and to outlets along the dock walls. The elevations of the old buildings followed, more or less, the natural contour of the land, and were 4.5 ft. to 6.5 ft. above mean sea level, while the floors of all the new buildings were raised to 7.5 ft. This provided much better surface drainage in and around the buildings.

The main offices and paint and rigger shops were moved to the opposite side of the dry dock from the other buildings. The paint and rigger shops are now in a concrete building, formerly occupied by one of the sections of the store-house and the offices in a building formerly used by the Navy. From the office building a clear view can be had of activities not only in the dry dock but over the entire shop area.

It has been necessary in the entire building programme to plan the location of the buildings, the order in which they were to be erected, and the actual erection so that there would be the least possible interference with the regular work carried on by the shops. A number of new machines were purchased to replace obsolete and worn-out ones, that had been in service 20 to 25 years. In these cases the new ones were installed and put into operation before the ones being replaced were removed. All of the machines in the new buildings are individually motor-driven in order to allow them to be operated separately as required. The new machines were purchased with motors while the machines that were in good condition, but in group drives, were provided with motors and controllers purchased to suit their individual requirements.

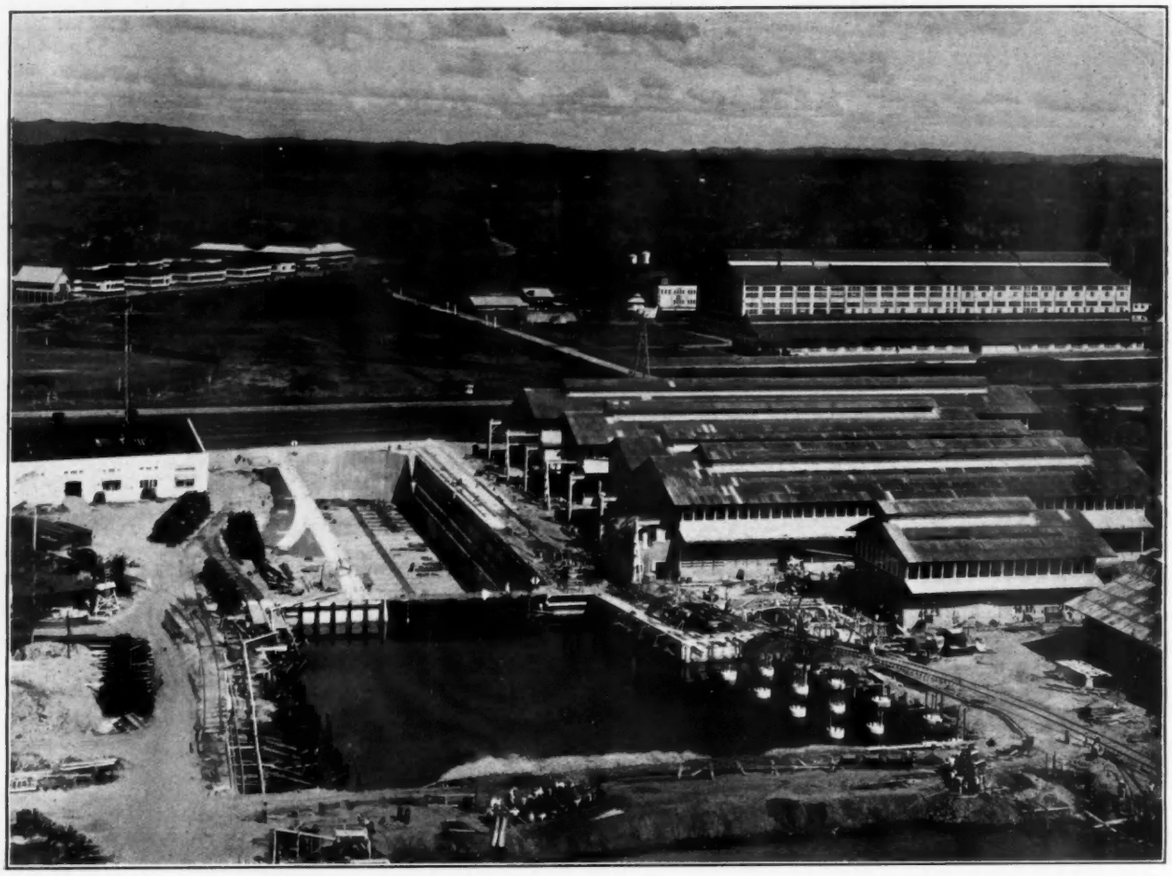
The first building constructed was the boiler shop, which is 316 ft. 3 ins. long by 48 ft. 7 ins. wide. A length of 63 ft. 3 ins. at one end is used by the General Storekeeper for storing steel plate and other material, and the balance is used for manufacturing structural steel work. This section contains the bending rolls, punches, shears, electric and gas-welding equipment, furnaces, etc., and is served by a 5-ton electric overhead crane travelling the full length of the building. The second built was the toilet building, for both gold and silver employees, which is 114 ft. ½ in. long by 22 ft. 10 ins. wide.

The next building was the pipe, sheet metal and forge shop, which is 231 ft. 11 ins. long by 48 ft. 7 ins. wide. Sixty-three feet 3 inches of one end is occupied by the forge shop, which contains the forges, furnaces, hammers, etc. The remainder contains the benches and machinery necessary to handle the pipe, sheet metal and copper work. This building has been provided with a runway for the future installation of an electric overhead travelling crane.

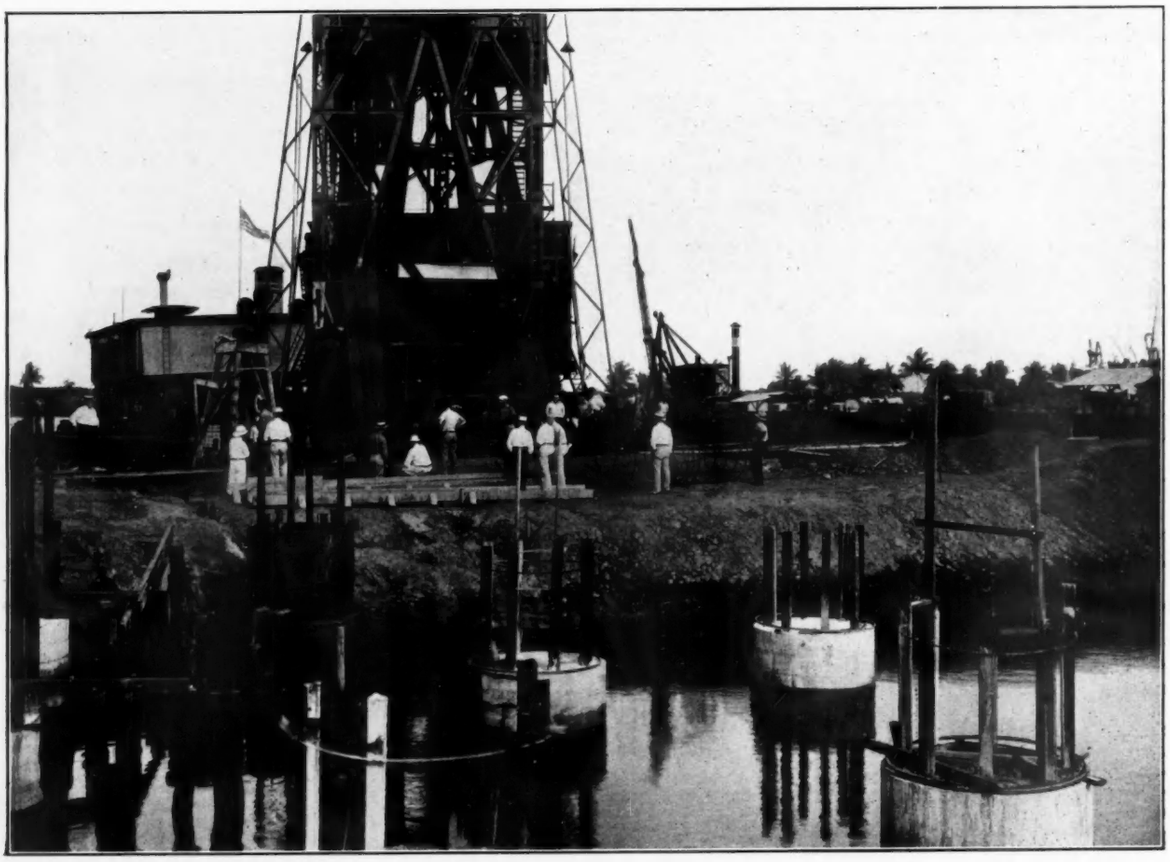
The machine shop followed this building, and is 231 ft. 11 ins. long by 119 ft. 4 ins. wide. It consists of two adjoining rows of transverse bents, the centre row of columns dividing the building in two sections, one of which contains the machines and lay-out tables, and the other the tool room and erecting floor. A 20-ton electric overhead travelling crane serves the machine section, while one of 40-ton capacity serves the other.

The wood shop, just completed, is 168 ft. 8 ins. long by 60 ft. 8 ins. wide, and is lower in height, since an overhead travelling crane is not required. The distance from floor to under side of roof trusses is 21 ft., while the corresponding distance in the three other main buildings is 36 ft.

The Panama Canal

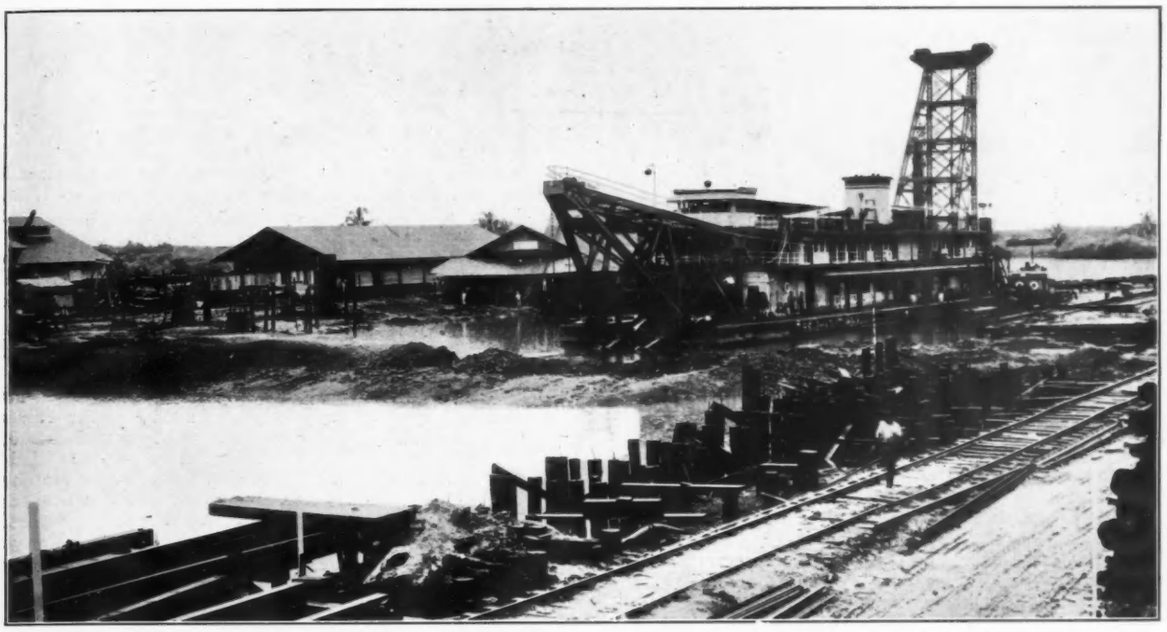


The Panama Canal, Cristobal Dry Dock Construction. View from top of boom of Crane "Hercules." October 3, 1933.



The Panama Canal, Cristobal Dry Dock Construction. Crane "Hercules" pulling Sheet Pile Core from Cofferdam. October 4, 1933.

The Panama Canal—continued



The Panama Canal, Cristobal Dry Dock Construction. Suction Dredge "Las Cruces" removing Cofferdam. October 13, 1933.

The air compressors and dry dock pumping equipment will be in one building, 126 ft. 6 ins. long by 48 ft. 7 ins. wide. The section, 84 ft. 4 ins. long, for the compressors, was built in 1930, while the remaining part for the pumps is now in the final stages of completion. A hand-operated 10-ton overhead travelling crane serves both sections of the building.

A modern concrete building within the area formerly used as a storehouse has been altered and fitted up as a combined paint shop, rigging loft, sail loft, mould loft, and workshop for marine electricians. This building is 96 ft. by 242 ft. in ground area.

The plans for the foundry have been completed, but the construction of the building will probably not be started for a year or two. It is to be 84 ft. 4 ins. long by 48 ft. 7 ins. wide, and 21 ft. to underside of main roof trusses. The old foundry will serve meanwhile. The new foundry will complete the rebuilding programme.

All tools have individual electric drive. Among the modern tools installed in these shops are boring mills up to a 9 ft. table, planers up to 5 ft. by 5 ft. by 26 ft., slotters up to 30 ins., lathes up to 48 ins., full-size milling machines, grinders, drilling machines and other machine shop tools, 18 ft. plate bending rolls and a similar sized heavy flanging clamp, horizontal and vertical punches and shears to handle the heaviest ship or boiler plate, plate and angle furnaces, steam hammers up to 2,500 lbs., pipe threading machines up to 12 ins., a complete sawmill and complete wood-working machinery for ship timbers as well as for joiner and cabinet work. Facilities exist for both electric and acetylene welding and cutting, small iron or brass castings can be produced without recourse to Balboa, and there is a complete equipment of pneumatic tools in all varieties, together with compressors to supply 3,750 cubic feet of compressed air per minute.

The equipment of these shops permits all ordinary repairs to ordinary vessels and any kind of repairs to small vessels. Machining or fabrication of material beyond the capacity of the Cristobal Shops can be performed at the Balboa Shops of the same operating division and shipped to Cristobal for installation. Ships too large or work too heavy for the Cristobal Shops can be accommodated at the Balboa Shops, where there is a dry dock of 1,000 ft. available length, and shops with equipment to accord. There is practically no limit to work that can be undertaken at Balboa, either as regards size of parts, character, or extent.

The Port of Halifax

Shipping.

During the month of February, 1934, a total of 345 vessels entered and cleared the Port of Halifax, as compared to 359 for February, 1933 and 352 for February, 1932. The net registered tonnage is reported at 935,494 tons, as compared to 1,001,434 tons for February, 1933, and 832,212 tons for February, 1932. The number of vessels engaged in the Trans Oceanic service entering and clearing during the month of February, 1934, totalled 197, as compared to 187 for February, 1933, and 164 for February, 1932. The number of vessels engaged in the coastwise trade entering and clearing during the month of February, 1934, totalled 148, as compared to 172 for February, 1933, and 188 for February, 1932.

Since January 1st, 1934, the total number of vessels arriving and departing at the Port of Halifax is reported at 804, as compared to 791 for the same period of 1933, and 829 for the first two months of 1932.

Cargo Tonnage.

The total cargo tonnage handled inward and outward during February, 1934, is reported at 210,255 tons, as compared to 162,816 tons for February, 1933. The total of 210,255 tons of cargo handled in February, 1934, is the second highest movement of cargo on record, being exceeded only in December, 1933, by a total of 214,444 tons.

Since January 1st, 1934, the total cargo tonnage handled inward and outward amounted to 381,403 tons, as compared to 281,036 tons for the first two months of 1933, or an increase of 36 per cent.

While inward tonnage is fairly constant, very substantial increases are shown in the outward or export movement, the total for the first two months of 1934 being 219,260 tons, as compared with 144,142 tons for the same period of 1933, and 122,101 tons and 117,761 tons for the first two months of 1932 and 1931, respectively.

Passengers and Mail.

The total number of passengers landed and embarked at the Port of Halifax during the month of February, 1934, is reported at 2,037, as compared to 2,401 for February, 1933. Since January 1st, the passenger traffic is reported at 4,253, as compared to 4,514 for 1933.

The quantity of mail handled during the month of February, 1934, is reported at 17,272 bags, as compared to 18,039 bags for February, 1933. Since January 1st, the mail traffic is reported at 34,003 bags, as compared to 40,998 bags for 1932.

Colombo Port Commission

Administration Report for 1933

Introductory.

THE year 1933 has been one of contrasts. It opened in the trough of a depression and ended on a wave of optimism. In the year 1932, for the first time since 1921, Ceylon's visible balance of trade disclosed an excess of imports over exports amounting in value to 7¼ million rupees. The year under review, however, closed with an excess of 23 million rupees of exports over imports. The recovery began in the second quarter of the year with a steady increase in tea prices after the Tea Restriction Scheme became operative. Later in the year rubber prices began to improve, and the year closed with the average price of tea at 71¾ cents. per lb., and rubber at 21½ cents. per lb. Cocoanut products, unfortunately, show no sign of recovery, and copra touched the low level of Rs. 4.46 per cwt. at the end of the year.

As a result of the improvement in the prices of two of the Island's staple commodities, the tonnage of exports has increased notwithstanding the reduced exportable quota of tea.

There has further been a marked increase in shipping during the past few months, and the Port revenue shows promising signs of recovery.

The policy of retrenchment commenced in 1929 was steadily pursued during the year, and further cuts were made in maintenance estimates. The stage has now been reached when further reductions would be uneconomical. There is a great deal of leeway to make up; many of the older jetties are in urgent need of repair and a heavier programme of maintenance repairs of Port Commission craft is essential. No further reductions in staff can be made, and vacancies arising in future must be filled. The increase in shipping noted above renders it essential to fill at the earliest possible moment one of the vacancies in the Pilot staff temporarily left unfilled as a measure of retrenchment. At times during the year when the services of the Port Commission's salvage tug " Hercules " were requisitioned outside the harbour, the greatest difficulty was experienced in manning the tugs with the depleted crews available. The limits of safety have been reached, if not exceeded, and it is essential, now that the tug refits are nearing completion, that the full complement of crews should be restored as early as possible in order to carry on the essential services of the Port with efficiency. So far as the increase in revenue permits, the present year must be one of reconstruction, and completion of arrears of maintenance after several years of intensive retrenchment; the draft estimates for the coming year will thus inevitably show slight increases in recurrent maintenance votes, while a programme of special expenditure will be submitted for adoption as funds become available. It is of the utmost importance to shipping in general and to the trade and prosperity of Ceylon in particular that the efficiency of the Port of Colombo should not be allowed to lag behind other competing ports in Southern India and the Far East. These facts are fully realised by the Colombo Port Commission and the Executive Committee of Communications and Works which, under the new constitution, controls all ports and harbours.

Details of the financial results of the year's working, and of the various works carried out during the year, and information regarding new Port rules and other matters of interest appear in the following sections of this Report.

Finance.

The financial year 1932-33 has shown a further decrease in the gross revenue of the Port. There has been a fall of 8.89 per cent., as compared with the gross revenue of the previous year, chiefly under revenue derived from port charges and rents.

The year's working of the port has resulted in an excess of revenue over the actual expenditure on working and maintenance amounting to Rs. 2,495,757. When capital expenditure, interest, and sinking fund contributions on loans, and interest at the rate of 4 per cent. on the accumulated deficit of revenue derived from the port, as compared with expenditure upon it to the end of the financial year 1931-32, have been charged against this sum, the net amount accruing to the general revenue of the Island is Rs. 350,829.

The maintenance charges account for the year ending September 30th, 1933, showed a surplus of Rs. 46,262, reducing the net deficit under the surplus and deficit account in respect of maintenance charges to Rs. 15,809.

The surplus in respect of the capital charges for the year ending September 30th, 1933, was Rs. 154,818, as compared with Rs. 202,294 for the previous year. This is due to smaller importations of oil during 1932-33. The total surplus on this account at September 30th, 1933, amounts to Rs. 2,189,861.

Trade at the Port.

The quantity of imports and exports, excluding coal and oil, handled in the Port of Colombo in 1933 amounted to 1,488,683 tons (854,833 tons imports and 633,850 tons exports), as compared with 1,539,160 tons (932,430 tons imports and 606,730 tons exports) handled in 1932. There has been a decrease of 50,477 tons in the total volume of trade, as compared with the preceding year. The decrease, however, is only in imports. The exports show an increase of nearly 4½ per cent.

Dredging and Deepening Colombo Harbour.

The dredger " Sir William Matthews " was engaged during the year in deepening the inshore berths between the Passenger and Block Jetties, and considerable improvements were effected to the depths available in the berths closest to Baghdad and Delft Warehouses. The dredger was docked in March and again in August, when the annual survey and refit was carried out. A total quantity of 232,050 cubic yards of dredged material was removed and deposited at sea during the year.

The inner harbour dredging was carried on by one grab digger working almost continually and another grab digger working intermittently, the third digger being laid up for the whole year. Dredging was carried out along the south-west breakwater to remove accumulations of sand at the water berths, and to complete the removal of the foundation of the old Target Store at the root of the breakwater. The removal of isolated high spots in harbour berths and along the foreshore was also continued during the year.

Practically no work on rock removal was carried out as the machinery from the rock drilling barge had been removed for installation in the new barge " Titan " under construction. The hull of the rock-drilling barge was under repair, pending the installation of the machinery from the old double barge.

Graving Dock, Guide Pier, Oil Jetties and Patent Slip.

The Graving Dock was in considerably greater demand by merchant vessels than in the preceding year, and several emergency dockings of merchant vessels were carried out in addition to a heavy Naval programme of dockings and refits and the usual dockings of departmental craft. The particulars of occupation of the dock are as follows:—

		Days	
9 Naval vessels		70	Afloat
		90	Docked down
12 Merchant vessels		33	
8 Departmental vessels (exclusive of 50 days occupation in company with Naval vessels)		47	
Total ... 29		240	

The dock was closed from November 6th to November 18th for repairs to the Caisson.

The Guide Pier and Oil Jetties were in use for discharge of oil tankers, bunkers, and other purposes as follows:—

	Occupation Days	No. of Vessels
Guide Pier	189½	91
Oil Discharge Jetty	7	3
Outer Bunkering Jetty	4	4

The Inner Bunkering Jetty was continuously in use by oil barges.

Experience in working these facilities has convincingly proved the urgent necessity for early provision of a deep water quay and oil basin.

The Patent Slip was occupied by 16 craft for a total period of 184 days. The facility was availed of almost exclusively by Government craft, the only private craft using it being the Ceylon Wharfage Company's tug " Lady Inchcape," the trawler " Ceylon Bul Bul," and the Admiralty Battle Practice Target.

A proposal to increase the capacity of the slipway to accommodate the larger departmental craft is being investigated by the Consulting Engineers. If the proposal is found to be feasible, and is carried out, the use of this facility will be considerably increased, and the present expenditure on periodical docking of the dredger and the tug " Hercules " will be greatly reduced. There will also be greater expedition of work as a result of closer access to workshops from the Patent Slip.

(concluded on page 228)

Near Eastern Port Matters

THE French High Commissioner for Syria has recently signed a decree creating a free zone in the Port of Beyrouth and approving the plans, etc. Steps have been taken to favour the transit of Trans-Asiatic trade through Beyrouth.

According to statistics which have just been published, shipping in the Port of Izmir (Smyrna) during 1933 included the arrival and clearance of British ships 161,422 gross tons, Italian ships 329,281 gross tons, and French ships 157,248 gross tons. The French Mercantile Marine has lost the largest share in Izmir shipping during 1933. As a matter of fact, in 1932 the French flag had occupied second place in traffic at Izmir, while it occupied third place in 1933.

From statistics which have just been published by the Statistique Générale de la Grece of the Ministry of National Economy, shipping at Greek ports during the period from January to November, 1933, included the arrival of 2,880 ships, representing 4,987,012 n.r.t., against 2,719 ships and 4,676,424 n.r.t. arrived during the corresponding period of 1932, whereas clearances during the first eleven months of 1933 included 2,432 ships, representing 4,195,449 n.r.t., against 2,153 ships and 3,895,544 n.r.t., which means that there is a considerable increase both in arrivals and clearances. The increase in arrivals is due above all to a progress in shipping with France, while the progress noticed in the clearances is due above all to the larger traffic with Italy. In order to obtain an idea of the position of the various countries in Greek waters it may be interesting to consider the following figures referring to foreign ships arrived and cleared from and to Foreign Ports:—

	ARRIVALS				CLEARANCES			
	1933		1932		1933		1932	
	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.
American...	21	79,687	26	88,362	33	120,535	30	110,557
British ...	157	343,204	191	347,096	148	258,923	158	215,255
French ...	75	247,152	110	369,893	71	251,097	102	367,392
Dutch ...	41	71,464	54	84,609	49	58,815	42	49,534
German ...	86	152,495	70	116,073	87	128,568	76	139,622
Italian ...	949	2,271,871	909	2,044,223	908	2,040,158	851	1,811,919
Roumanian	145	209,159	129	157,336	145	210,846	117	114,700

The British flag, in 1933, occupied second place, both in arrivals and clearances, from Greek ports, whereas in 1932 it occupied third place. As far as arrivals are concerned, it may be said that the German, Italian and Roumanian flags have greatly increased their activities, whereas in departures from Greek ports an increase is noticed in the American, British, Dutch, Italian and Roumanian flags.

Pireaus, of course, has maintained first place among Greek ports during the period under review, and shipping at this port has increased. Arrivals at Pireaus during 1933 included 1,621 ships, representing 3,352,757 n.r.t., against 1,583 ships and 3,141,692 n.r.t. during 1932, and 1,078 ships cleared, representing 2,218,002 n.r.t., against 1,092 ships and 2,212,424 n.r.t. during 1932, the increase being especially due to the larger coal trade with the Black Sea ports, while the cereal trade has remained unaltered. It is reported that the Greek Government is considering the possibility of placing two more electrical coal elevators on the quay, where the coal trade is handled and also appropriate facilities to handle the bunkering of ships.

The position of the various countries in shipping at Pireaus is shown by the following figures:—

	1933 ARRIVALS		1932		1933 CLEARANCES		1932	
PIREAUS	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.
American...	20	78,199	25	88,362	3	10,835	5	17,442
British ...	94	222,479	120	234,579	28	72,401	41	55,988
Dutch ...	18	41,996	31	60,733	7	9,717	3	4,725
French ...	69	229,188	101	362,940	67	228,844	100	364,537
German ...	52	92,180	43	59,096	13	23,160	13	19,409
Italian ...	556	1,399,872	504	1,164,342	450	1,019,384	434	962,301
Roumanian	116	187,203	112	146,598	110	182,977	98	128,467

As far as arrivals are concerned, the increase has been limited to the German, Italian and Roumanian flags, while in connection with clearances it may be interesting to note that there has been an increase in the activity of the British, Dutch, German, Italian and Roumanian flags. The increase in the activity of the British flag in clearances is due to a larger number of calls made by British liners on their way from the Black Sea to North Europe.

The Port of Patras follows Pireaus in order of importance, and shipping there included, during the period from January to November, 1933, the arrival of 188 ships, representing 506,718 n.r.t., against 199 ships, representing 479,803 n.r.t. during the corresponding period of 1932, and the clearance of 168 ships, representing 587,755 n.r.t., against 116 ships and 411,416 n.r.t.

The position of the various foreign countries in shipping at Patras is as follows:—

	ARRIVALS				CLEARANCES			
	1933		1932		1933		1932	
PATRAS	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.
American...	—	—	—	—	2	7,789	5	16,969
British ...	18	24,597	22	34,217	27	33,391	30	39,432
Dutch ...	11	15,937	8	7,908	8	9,986	10	12,431
French ...	—	—	—	—	—	—	—	—
German ...	10	11,023	10	12,073	13	16,015	11	13,091
Italian ...	90	391,728	81	373,870	101	501,728	50	307,651
Roumanian	1	733	—	—	—	—	—	—

With the exception of the Dutch and Italian flags, all other countries have lost considerably in arrivals at Patras, while in connection with clearances the improvement has been confined to the German and Italian flags. The fact that many North European countries have lost ground in shipping at Patras is also due to larger activity at the ports of Katacolon and Calamata.

Finally, among the Greek ports may be mentioned Salonika, where, however, the crisis has been felt more than elsewhere, in consequence of the decline of exports from Macedonia, of which Salonika is the outlet. According to official statistics, shipping at Salonika during the period from January to November, 1933, included the arrival of 107 ships, representing 143,243 n.r.t., against 150 ships and 213,794 n.r.t. in the corresponding period of 1932, and the clearance of 160 ships, representing 247,018 n.r.t., against 154 ships and 261,847 n.r.t. This decline explains the reason why the Salonika Free Zone Administration is doing everything possible to attract Bulgarian transit trade through this Macedonian port, but it should be remembered that though traffic has declined, harbour facilities are still inadequate, and the creation of a Bulgarian free zone would require an extension of the harbour facilities, for which at present no fund is available. The position of the various countries in shipping at Salonika is shown by the following figures:—

	ARRIVALS				CLEARANCES			
	1933		1932		1933		1932	
SALONIKA	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.	No.	N.R.T.
American...	—	—	—	—	15	52,725	9	31,623
British ...	19	30,590	17	31,325	23	35,628	24	36,580
Dutch ...	4	4,124	5	5,155	4	5,963	1	1,545
French ...	4	2,204	2	853	—	—	—	—
German ...	2	2,023	4	7,917	4	6,700	3	5,572
Italian ...	2	5,928	25	53,405	6	9,232	29	51,623
Roumanian	20	14,512	16	9,286	24	19,337	9	7,722

As far as arrivals are concerned, practically all the foreign flags lost ground in Salonika during 1933, the only exceptions being the Roumanian and French flags. The American, Dutch, German and Roumanian flags have, instead, increased their activities in departures from Salonika.

According to official statistics supplied from Belgrade, traffic in the Jugoslav Free Zone at Salonika during 1933 included the imports of 180,544 tons of goods from Jugoslavia by rail and 1,135 tons by ship, while imports from foreign countries included 23,423 tons. Shipments from the Jugoslav Free Zone during 1933 included: to Jugoslavia, 25,480 tons by rail and 3,434 tons by ship; to Greece, 3,486 tons by rail and 373 tons by ship, and to other countries 167,253 tons of minerals by sea.

Shipping at Jugoslavian ports is showing an increase, chiefly due to the progress in shipments of lumber, and according to the latest figures obtainable the exports from the Port of Sibenik, during February, 1934, included 5,910 tons of coal, 524 tons of lumber for burning, and 12,102 cubic metres of lumber for building, etc. The warehouses under construction at Split, Sussak and Gruz have been completed, and the Jugoslav Minister for Commerce is considering, together with the Minister of Communications, the question of creating free zones in the various ports, and to organise these warehouses as general bonded stores.

Argentina: Tender for the Supply of One Steel Barge.

The Commercial Counsellor to His Majesty's Embassy at Buenos Aires reports that the Argentine State Oilfields Directorate is calling for tenders, to be presented in Buenos Aires by the 29th May, 1934, for the supply of one steel barge for a load of 300 metric tons.

Firms desirous of offering a barge of United Kingdom manufacture can obtain the further details of this call for tenders, together with particulars of the " Special Register " service of information, upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference Number A.Y.12343 should be quoted.

Notes of the Month

Appointment.

Capt. Donald H. Macmillan, who has been in the service of the Mersey Docks and Harbour Board for five years, has been appointed Hydrographical Surveyor to the Southampton Harbour Board.

Launch of Portuguese Submarine.

The Portuguese submarine " Delfim " was launched on May 1st from the Naval Construction Works of Vickers-Armstrongs Limited, Barrow-in-Furness, by Madame Santar do Amaral, wife of Captain Santar do Amaral, of the Portuguese Naval Commission in Newcastle.

Manchester Ore Cargoes.

The Port of Manchester gave us two examples of quick discharge last week.

The " Tunni " with 1,790 tons of pyrites from Vignes, Spain, and the " Castor " with 1,700 tons of ore from Ballangan, Norway, discharged at Irwell Park Wharf on the Ship Canal in a normal working day of eight hours: expeditious work, in view of the fact that the disposition of the cargoes permitted only three cranes operating on each ship.

Bombay Port Trust.

At a meeting of the Trustees of the Port of Bombay held on 10th April, 1934, the following were the main items of business disposed of:—

The tender of the Cement Marketing Company of India, Ltd., for the supply of 600 tons Swastika Brand Portland Cement for repair and maintenance works during 1934-35, was accepted.

The Board accepted the quotation of Messrs. Turner Hoare and Co. amounting to Rs. 11,502 for the supply of lamps and refractors in connection with improved lighting arrangements on Port Trust Estates.

Mechanical Handling Equipment.

A most interesting and well-produced catalogue has just been issued by Messrs. Henry Simon, Ltd., Cheadle Heath, Stockport, describing various types of mechanical handling equipment for materials and goods.

The catalogue, which comprises 60 pages, is very fully illustrated and gives details of some of the handling equipment which has been constructed by Messrs. Henry Simon. Sections are devoted to coal handling plant, phosphate handling plant, post office equipment, materials and goods handling and handling equipment and accessories.

Messrs. Henry Simon will be pleased to forward copies of this catalogue to any of our readers upon request.

Liverpool's Claim.

Liverpool still claims to be the first export port of the United Kingdom. Mr. Walter D. Williams, publicity officer of the Mersey Docks and Harbour Board, states that the weight of goods discharged and loaded in the Mersey docks last year was about 12,300,000 tons, and the total tonnage of ships inwards and outwards was 37,500,000. The exports of goods manufactured in the United Kingdom totalled £365,000,000, and nearly one-third of this passed through Liverpool, about £106,000,000. London's exports amounted to £87,000,000, and those of our nearest competitor, Manchester, £12,000,000.

Mr. Williams mentioned that it took 2½ hours to pump out 44,000,000 gallons of water from the Gladstone Graving Dock. He referred also to the Stanley tobacco warehouse, the largest of its kind in the world, which could accommodate 75,000 casks of tobacco. The value of the average stock carried in the warehouse, including duty, was £30,000,000.

Clyde Navigation Trust: Appointment of Harbour Master.

In succession to Captain D. P. Campbell, who has retired under the age limit laid down by the Clyde Trustees, Captain J. W. Eaglesome was at the last monthly meeting of the Trustees appointed Harbour-master of the Clyde Navigation Trust.

A native of Campbeltown, he started his sea-going career in the Shire Line sailing ship " Arctic Stream," built by Russell and Co., in 1885, in which vessel he served his apprenticeship. Later, he joined the Clan Line, and qualified for his master's certificate at the age of 24, in 1916.

During the war he took part in trooping at the Dardanelles, acting as second officer of the " Clan Macrae." While serving on board the " Clan Maclaren " he was mentioned in despatches.

He entered the service of the Clyde Pilotage Authority in February, 1924, and since then he has had a wide experience in handling all classes of vessels on the river and Firth. In addition to his river licence, he held the deep-sea licence of the Clyde Pilotage Authority, and had extensive experience in piloting ships coastwise.

Tilbury Landing Stage Record.

A record was made at Tilbury Passenger Landing Stage on the morning of April 27th, when the ss. " Worcestershire " arrived from Rangoon. The vessel came alongside at 10.30 a.m. and in 35 minutes over 200 passengers had disembarked and 1,200 packages of baggage had been put ashore, the vessel leaving the stage for dock at 11.5 a.m.

An hour previously the " Rajputana " had arrived at the stage from Bombay and had disembarked 450 passengers and left the stage in one hour.

The number of home-coming passengers from India is increasing and large numbers are expected in the course of the next few weeks.

Safe Load Indicators.

Messrs. John M. Henderson & Co., Ltd., King's Works, Aberdeen, have recently issued two leaflets describing safe load indicators for cranes.

Leaflet No. 60-1 E. describes very fully the " Henderson " safe load indicator for derrick cranes and this has been approved by the Home Office.

Leaflet No. 62-1 E. describes the " Wylie " safe load indicator for locomotive cranes, and Messrs. John M. Henderson are the principal Agents for the " Wylie " Indicator.

The safe load indicator shows the driver at once whether too heavy a load is being carried, by means of a pointer which moves up and down the face of the indicator according to the amount of weight being carried.

If any of our readers are desirous of obtaining copies of these leaflets they can do so by application to Messrs. John M. Henderson & Co., Ltd.

Election of Chairman and Vice-Chairman of Port of London Authority.

At the first meeting of the New Board of the Port of London Authority to-day, the Rt. Hon. Lord Ritchie, of Dundee, and the Rt. Hon. Thomas Wiles, P.C., were unanimously elected chairman and vice-chairman respectively.

Lord Ritchie has been chairman since 1925 and was vice-chairman from the Authority's inception in 1909 until 1925.

Mr. Wiles was first elected to the Board of the Port Authority in 1923, being one of the members representing " Goods." He has been chairman of the Law and Parliamentary Committee since 1925, but has relinquished the position on his appointment as vice-chairman.

Mr. Wiles was for some time on the London County Council, being elected in 1899 as representative of South-West Bethnal Green. He was a Member of Parliament for twelve years—1906 to 1918—representing South Islington as a Liberal. During this period he was Parliamentary Secretary to the Rt. Hon. T. McKinnon Wood (Financial Secretary to the Treasury and afterwards Secretary for Scotland). In 1916 he was sworn a Member of H.M. Privy Council.

The new vice-chairman has many commercial interests in the City of London. He is senior partner in the firm of Messrs. Joseph Wiles and Son, Ltd., grain merchants, whom he joined in 1882, vice-chairman of the Corn Exchange, a member of the Baltic Exchange, a member of Lloyd's, and a director of the Anglo-Portuguese Colonial and Overseas Bank, Ltd. He was President of the London Corn Trade Association in 1919 and 1920, and President of the National Federation of Grain Trade Associations 1922-23.

Mr. Wiles is also a Fellow of the Royal Society of Arts, vice-chairman of the Royal Surgical Aid Society and a Justice of the Peace for Oxfordshire.

Danzig Shipping during March.

Shipping at the Port of Danzig in March amounted to 381 ships of 245,342 n.r.t. arrived as compared with 388 ships of 214,684 n.r.t. in February. There were 386 ships of 256,390 n.r.t. cleared the port in March as compared with 334 ships of 199,108 n.r.t. in February.

Comparing the March figures of 1934 with those of 1933, entrances showed an increase of 40,000 n.r.t. and clearances 46,000 n.r.t.

For the first three months of this year 1,115 ships entered the port with a net registered tonnage of 737,539 and 1,110 ships of 739,664 n.r.t cleared the port. There was an increase in entrances of 126,404 n.r.t. and in clearances of 151,618 n.r.t. as compared with the same period of 1933.

Regarding the countries trading with Danzig, Germany took the foremost place with 130 vessels of 55,349 tons, while Denmark took second place with 62 ships of 38,325 tons.

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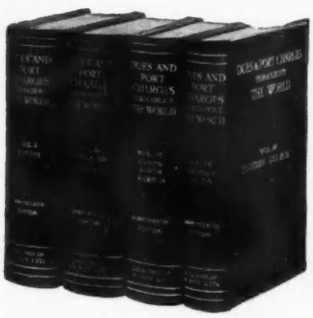

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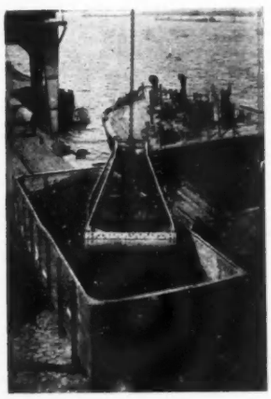

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Colombo Port Commission *(concluded from page 224)*

Oil Facilities.

The Common Facilities Oil Scheme was satisfactorily worked during the year. Six vessels with bulk cargoes of dangerous petroleum, and twenty-nine vessels with bulk cargoes of non-dangerous petroleum were dealt with. The following quantities of petroleum discharged were handled by the Common Facilities:—

	Tons
Fuel Oil	272,734
Kerosene Oil	20,726
Petrol	19,228

In addition to these quantities, some 142,875 tons of fuel and diesel oil were transferred from the Kolonnawa Oil Installations Depôt to the Measuring Tanks Depôt at Bloemendahl and the Stanley Power Station.

A new 6 ft. footpath is being constructed along the southern boundary of the dangerous section of the Kolonnawa Oil Installations Depôt to replace the old Gansabhawa road which was closed with the opening of the Oil Depôt.

Dolphins at the Graving Dock Approach.

Three dolphins are being constructed on the south side of the Graving Dock approach to protect vessels using the dock from being blown over on to the rubble ramp on that side. It may be found possible to utilise these dolphins to berth small vessels undergoing re-fits at the Guide Pier when the latter is required for other purposes.

The dolphins are a replacement of two old dolphins which have become unserviceable. Two of the three new dolphins have been completed, with the exception of timber decking and fendering, and materials for the third have been prepared.

Repairs to Delft Quays.

The original filling at the back of the quay in the Delft area had been washed out from between the cylinders by wave action, and it was found necessary to seal up the joints in the cylinders, re-fill the voids, and re-surface the disturbed area temporarily with tarred macadam, pending its eventual replacement with sett paving on concrete. A considerable portion of this work was carried out during the year, the light traffic during the period of depression specially facilitating its execution without interruption.

Beira Lake.

The locks and pumping station at San Sebastian and the locks from the Beira Lake to the Harbour at McCallum road were maintained and continuously operated during the year. Heavy repairs to the gates at McCallum Locks were carried out, and a new pair of gates was fitted at the seaward end of East Locks. Further renewals of gates will be necessary in the near future.

Dredging of the East Lake was carried out during the year, the dredged material being utilised to reclaim the area between McCallum road and the lake west of the Suduwella ditch. Dredging of the other channels and the basin of the lake was not possible as the grab dredger could not be moved from lake to lake by reason of its size and the lack of head-room under the bridges in the lake system. The dredging of the Beira Lake to a depth consistent with growing traffic requirements has engaged the attention of the Colombo Port Commission since it took over the administration of the water area of the lake, but no progress could be made on account of the inadequacy of the existing lake dredging equipment. The present method of dredging is not only unsatisfactory but is costly and slow, and investigations have therefore been made as to the feasibility of obtaining a suitable and efficient plant at a moderate cost.

Connected with the question of improved dredging is a proposal for the reclamation of the various areas round the lake shores with the dredged spoil. This proposal has the attraction of being economical and remunerative in that it would release extra riparian land at a reasonable cost for leasing purposes and would, while eliminating the highly insanitary foul bays and backwaters in the borders of the lake in the very heart of the city of Colombo, increase the facilities for water borne traffic. This proposal is in turn linked up with the further question of the importance of the lake as a lung of the city and not merely as an artery of commerce, and both these aspects will be given full consideration when the matter comes up for final decision.

Lake to Harbour Canal.

Since the Colombo Port Commission took over the administration of the Lake to Harbour Canal and Locks, it has pursued a consistent policy of exploiting every avenue for popularising the use of this waterway for the transit of import and export cargo to and from vessels in the harbour. Statistics of traffic, both overland and waterborne, have been compared from time to time and reductions made in lock charges, so as to render water transport relatively more economical.

The cumulative effect of these concessions has, however, been slow to mature, but indications of their beneficial results are now reflected in the increasing returns of traffic and revenue through this source.

The total amount of cargo exported through the Canal during 1933 was 82,167 tons, which is the highest export figure since the opening of the locks in November, 1922, while the total tonnage of traffic during the year was exceeded only by the tonnage for the peak year 1930.

The popularity of the Lake to Harbour Canal is largely contingent on the efficiency of the facilities provided for navigation of the Beira Lake, which is connected with the Harbour by the Canal, and the waterside facilities for loading and unloading of cargo and other commercial activities. The development of the Lake for cargo traffic will therefore be systematically pursued for the realisation of the desired results. One of the most important improvements in contemplation is the provision of a larger lock and bridge capable of passing 100-ton lighters to and from the Lake.

Bombay Port Trust

At a meeting of the Trustees of the Port of Bombay, held on 27th February, 1934, the following were the main items of business disposed of:—

The contract for the supply of labour, etc., for loading, unloading and bunkering Port Trust coal and coke during 1934-35 was placed with Messrs. Madhavlal and Co., Ltd., the lowest tenderer.

Amendments of the Docks and Bunders Scales of Rates were approved, subject to the sanction of Government, to provide for the levy of reduced wharfage rates on (1) acids in liquid form, packed in drums up to 45 lbs. each, and (2) Plaster of Paris which, in future, will be classified under "chemicals."

The Board approved, subject to the sanction of Government, revised Port Rules relating to the control of vessels in the Port carrying petroleum, and to the transport, discharge or loading of petroleum in the XX Port, together with consequential amendments in the Docks By-laws.

* * * *

At a meeting of the Trustees of the Port of Bombay, held on 27th March, 1934, the following were the main items of business disposed of:—

Licenses were granted for stevedoring vessels in the docks and for cleaning, painting and repairing vessels in the dry docks during the year 1934-35.

An estimate of Rs. 90,000 (being part of a Rs. 5 lakh scheme to be spread over a period of six years) was sanctioned for expenditure in 1934-35 on re-surfacing with asphalt certain water-bound macadam roads carrying heavy traffic and in urgent need of repairs. The new method of surfacing will effect a very substantial saving in future cost of maintenance of the heavy traffic roads.

With reference to the announcement made by the Chairman when introducing the Port Trust Budget for 1934-35 regarding the proposed reduction of Port Trust wharfage and railway freight charges with a view to checking diversion of the export cotton traffic from Bombay, the Trustees considered the detailed proposals and approved, with effect from 1st April, 1934, amendments of the Docks and Bunders Scales of Rates and the Bombay Port Trust Railway Goods Tariff to provide for reduction of 33-1/3rd per cent. in the Docks and Bunders wharfage rates for Indian and other varieties of cotton and abolition of the Port Trust Railway freight charge of one anna per bale on all inward bookings of cotton to Cotton Depot. These measures are estimated to afford the cotton trade relief to the extent of Rs.6.66 lakhs on the budgetted estimate of the volume of traffic during next year and the combined effect of the above reduction, plus abolition of Town Duty on cotton and reduction in railway freights by the G.I.P. and B.B. & C.I. Railways, represent in the aggregate a relief to the trade of about Rs. 40 lakhs a year. The Trustees only recently sanctioned a substantial reduction in the storage rents at the Sewri Cotton Depot. Godowns, which rented at Rs. 675 a month in 1924 when the depot was opened, have now been reduced to Rs. 400, and the rents of the jethas and open-sided sheds have been proportionately lowered.

The Board further decided, subject to the sanction of Government to the relative amendment of the Docks Scale of Rates, to restrict the scope of the concessional west coast schedule of wharfage rates, in the case of transhipment cargo, to ports lying within the coastal zone prescribed in Section II of the Docks Scale of Rates.

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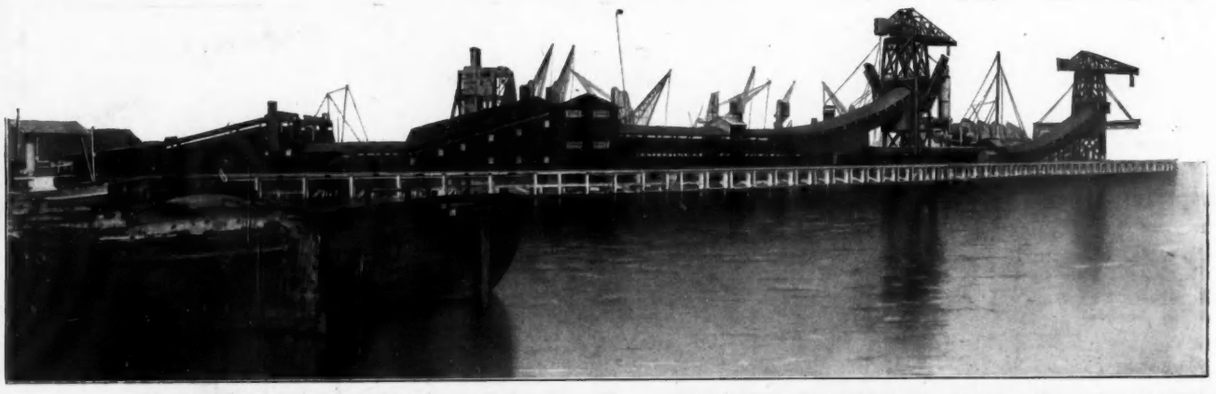

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